DTIC FILE COPY

(6)

AD-A216 269

NPS-63-90-001

NAVAL POSTGRADUATE SCHOOL

Monterey, California

DTIC
ELECTE
JAN 02 1990
S B D

SOUNDING AND SURFACE METEOROLOGICAL DATA FROM THE LAND/SEA BREEZE EXPERIMENT (LASBEX)

William J. Shaw

Richard J. Lind

November 1989

Approved for public release; distribution is unlimited.

Prepared for: Naval Oceanographic and Atmospheric Research Laboratory
Monterey, CA 93943-5006

90 01 02 080

NAVAL POSTGRADUATE SCHOOL
Monterey, California 93943

Rear Admiral R. W. West, Jr.
Superintendent

J. M. Shull
Provost

This report was prepared for the Naval Oceanographic and Atmospheric Research Laboratory. The work was funded in part by the Naval Environmental Prediction Research Facility with funds provided by Work Request N685687WR67635-12 AUG 87 and in part by the Naval Postgraduate School.

Reproduction of all or part of the report is authorized.

This report was prepared by:

William J. Shaw
Associate Professor of Meteorology

Richard J. Lind
Research Meteorologist

Reviewed by:

Robert J. Renard, Chairman
Department of Meteorology

Released by:

Gordon E. Schacher
Dean of Science and Engineering

UNCLASSIFIED
SECURITY CLASSIFICATION OF THIS PAGE

REPORT DOCUMENTATION PAGE

Form Approved
OMB No 0704-0188

1a REPORT SECURITY CLASSIFICATION UNCLASSIFIED	1b RESTRICTIVE MARKINGS
2a SECURITY CLASSIFICATION AUTHORITY 2b DECLASSIFICATION/DOWNGRADING SCHEDULE	3 DISTRIBUTION/AVAILABILITY OF REPORT Approved for public release; distribution is unlimited
4 PERFORMING ORGANIZATION REPORT NUMBER(S) NPS-63-90-001	5 MONITORING ORGANIZATION REPORT NUMBER(S)
6a NAME OF PERFORMING ORGANIZATION Naval Postgraduate School 6b OFFICE SYMBOL (If applicable) 63	7a NAME OF MONITORING ORGANIZATION Naval Oceanographic and Atmospheric Research Laboratory
6c ADDRESS (City, State, and ZIP Code) Monterey, CA 93943-5000	7b ADDRESS (City, State, and ZIP Code) Monterey, CA 93943-5006
8a NAME OF FUNDING/SPONSORING ORGANIZATION Naval Environmental Prediction Research Facility; Naval Postgraduate School 8b OFFICE SYMBOL (If applicable)	9 PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER NEPRF Work Request N685687WR67635-12 AUG 87
8c ADDRESS (City, State, and ZIP Code) Monterey, CA 93943-5000	10 SOURCE OF FUNDING NUMBERS PROGRAM ELEMENT NO / PROJECT NO / TASK NO / WORK UNIT ACCESSION NO

11 TITLE (Include Security Classification)
Sounding and Surface Meteorological Data from the Land/Sea Breeze Experiment (LASBEX) (U)

12 PERSONAL AUTHOR(S)
William J. Shaw and Richard J. Lind

13a TYPE OF REPORT	13b TIME COVERED	14 DATE OF REPORT (Year, Month, Day)	15 PAGE COUNT
Data Report	FROM 88-10 TO 89-9	1989 November 3	294

16 SUPPLEMENTARY NOTATION

17 COSATI CODES			18 SUBJECT TERMS (Continue on reverse if necessary and identify by block number)
FIELD	GROUP	SUB-GROUP	LASBEX; Sea Breeze Coastal Atmospheric Boundary Layer

19 ABSTRACT (Continue on reverse if necessary and identify by block number)

The Land/Sea Breeze Experiment (LASBEX) was a program designed to investigate the structure and evolution of the coastal marine atmospheric boundary layer with standard and state-of-the-art meteorological systems. Measurements were made in the vicinity of the mouth of the Salinas Valley in central California during the last two weeks of September, 1987. This report documents standard meteorological data from surface and sounding systems during the experiment.

20 DISTRIBUTION/AVAILABILITY OF ABSTRACT ☒ UNCLASSIFIED/UNLIMITED ☒ SAME AS RPT ☐ DTIC USERS	21 ABSTRACT SECURITY CLASSIFICATION UNCLASSIFIED
22a NAME OF RESPONSIBLE INDIVIDUAL William J. Shaw	22b TELEPHONE (Include Area Code) (408) 646-3430 22c OFFICE SYMBOL 63Sr

DD Form 1473, JUN 86 Previous editions are obsolete SECURITY CLASSIFICATION OF THIS PAGE
S/N 0102-LF-014-6603 UNCLASSIFIED

TABLE OF CONTENTS

ABSTRACT i

1. Introduction. 1

2. THE FIELD MEASUREMENT PROGRAM 2
   2.1 LASBEX Geography 2
   2.2 Surface and Sounding Measurement Systems 2

3. TIME SERIES, LIDAR SITE 6

4. TIME SERIES, PRIMARY SODAR SITE--NPS 21

5. TIME SERIES, PRIMARY SODAR SITE--NEPRF 35

6. TIME SERIES, EASTERN VERTEX OF THE SODAR TRIANGLE--NEPRF 56

7. TIME SERIES, WESTERN VERTEX OF THE SODAR TRIANGLE--NEPRF 77

8. TIME SERIES, R/V SILVER PRINCE--NPS 97

9. TIME SERIES, MOSS LANDING MARINE LABORATORIES 106

10. TIME SERIES, MARINA BEACH 122

11. TIME SERIES, MONTEREY BAY AQUARIUM 131

12. TIME SERIES, MONTEREY AIRPORT 145

13. TIME SERIES, FRITZSCHE ARMY AIRFIELD--FT. ORD 160

14. TIME SERIES, SALINAS MUNICIPAL AIRPORT 174

15. TIME SERIES, PASO ROBLES AIRPORT 189

16. RADIOSONDE PROFILES, PRIMARY SODAR SITE 204

17. RAWINSONDE PROFILES (COMPLETE), SILVER PRINCE 232

18. RAWINSONDE PROFILES (LOWEST 1500 M), SILVER PRINCE 262

19. REFERENCE 292

20. ACKNOWLEDGEMENTS 292

21. DISTRIBUTION LIST 293

Accession For
NTIS GRA&I ☑
DTIC TAB ☐
Unannounced ☐
Justification
By
Distribution/
Availability Codes
Dist | Avail and/or Special
A-1

ABSTRACT

The Land/Sea Breeze Experiment (LASBEX) was a program designed to investigate the structure and evolution of the coastal marine atmospheric boundary layer with standard and state-of-the-art meteorological systems. Measurements were made in the vicinity of the mouth of the Salinas Valley in central California during the last two weeks of September, 1987. This report documents standard meteorological data from surface and sounding systems during the experiment.

1. INTRODUCTION.

The Land/Sea Breeze Experiment (LASBEX) was a field measurement program in the Salinas Valley of central California during the period 15-30 September 1987. Primary participants in the project included the Naval Environmental Prediction Research Facility (NEPRF), NOAA's Wave Propagation Laboratory (WPL), and the Naval Postgraduate School (NPS). While the catalyst for LASBEX was the need to validate the performance of WPL's 10.6 micron doppler lidar in the marine environment, the program was designed to address several scientific questions regarding the nature of the atmospheric boundary layer in the coastal environment (Intrieri, et al., 1989). These include (1) the nature of the land/sea breeze circulation, (2) the nature of small-scale internal circulations associated with the land and sea breezes, (3) the distribution of aerosols with respect to the sea breeze, and (4) the relation between gravity waves and the structure of the stable boundary layer.

Instrumentation systems employed in conjunction with the lidar measurements included three sodars (two of which were doppler), one radiosonde system, one rawinsonde system, and a number of surface meteorology systems. The surface data were collected both from systems which were deployed as part of LASBEX and from systems of opportunity, including local airport reports. The purpose of this report is to present the data which were collected from the surface systems and from the soundings during the two-week field measurement period.

2. THE FIELD MEASUREMENT PROGRAM

2.1 LASBEX Geography

Fig. 1 shows the geography of LASBEX. The field measurement program was centered in the mouth of the Salinas valley, which runs southeast from Monterey Bay in a direction approximately 140 deg. from north. Locations which had surface meteorology measurement systems which were formally deployed as part of LASBEX are indicated on the map as the lidar site, the three vertices of the sodar triangle, and the R/V Silver Prince. The other labeled locations provided routine surface meteorology measurements at intervals ranging from 8 s to 1 hr. Rawinsondes were launched from the R/V Silver Prince, which was on station during daylight hours. Radiosondes were also launched from the northern vertex of the sodar triangle (which was also designated the primary sodar site) on an irregular schedule which was coordinated with lidar observations.

2.2 Surface and Sounding Measurement Systems

The Naval Postgraduate School operated three surface measurement systems manufactured by the Coastal Climate Company, Ltd., which logged the wind vector, temperature, relative humidity, and pressure at 20 s intervals. The sensors used in the Coastal Climate Weatherpak systems include an R. M. Young Model 05103 wind monitor, a Rotronics MP-100 probe for temperature and relative humidity (shielded in a Gill multiplate free-flow radiation screen), and a Setra Model 270 barometer. These stations were located at the northern vertex of the sodar triangle, the lidar site, and aboard the R/V Silver Prince. Wind data from the Silver Prince have been adjusted for ship heading changes.

NEPRF contracted for the operation of three surface stations by the Berkeley Solar Group, one at each vertex of the sodar triangle. Sensors for these stations included Atmospheric Instrument Research Co. AIR-DB-1A pressure sensors, Met-One Model 024A propeller vanes for the wind vector, and Campbell Scientific Model 207 sensors for temperature and relative humidity. Table 1 lists the location, period of operation, sampling interval, and variables measured for each of these systems. Table 2 lists the same information for the stations of opportunity whose data are included in this report.

Sounding data were collected from the R/V Silver Prince for 10 days (28 soundings, including winds) during LASBEX and from the northern vertex of the sodar triangle (27 soundings) irregularly during the entire 15 day LASBEX measurement period. Aboard the R/V Silver Prince, NPS used the W-8000RP+ rawinsonde system manufactured by VIZ, Inc. This rawinsonde system comprises a standard rod thermistor, carbon hygristor, and aneroid cell/baroswitch for temperature, relative humidity, and pressure measurements respectively. The system sampled the sensors at an interval of 15 s. The 100-gram balloons were inflated to give approximately a 3 m s^{-1} rise rate, yielding a vertical resolution of 50 m. These sondes also received Loran-C time differences to produce profiles of the horizontal wind components. Rawinsondes were launched roughly every 2 hr from the Silver Prince, and observations extended to altitudes of 7-8 km.

The radiosonde system operated at the sodar site was an Airsonde system which used essentially the same sensor systems as the VIZ system. This system sampled at a more rapid rate of once per 5 s, however, yielding a vertical resolution of 10-15 m.

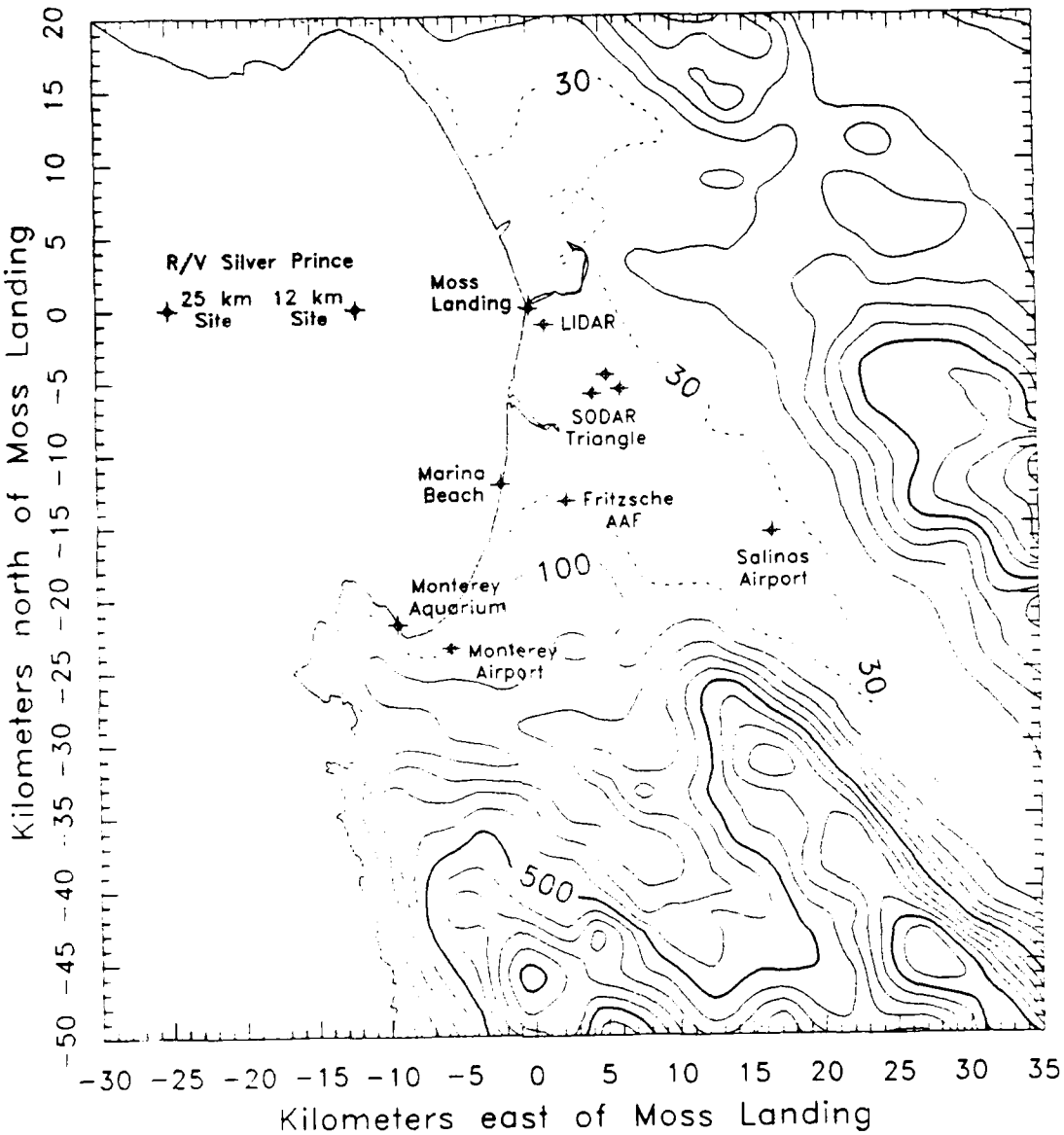


Figure 1. Locations of sounding launches and surface meteorology stations during LASBEX. Surface stations include stations of opportunity which were collecting routine data during the field measurement period. One station, Paso Robles Airport, is not shown because of its location approximately 150 km southeast of Moss Landing in the Salinas Valley. The general terrain elevation contour interval is 100 m, and the dashed contour indicates an elevation of 30 m.

Table 1. LASBEX surface meteorology systems. Meteorological variables are pressure (P), temperature (T), relative humidity (RH), and vector horizontal wind (V).

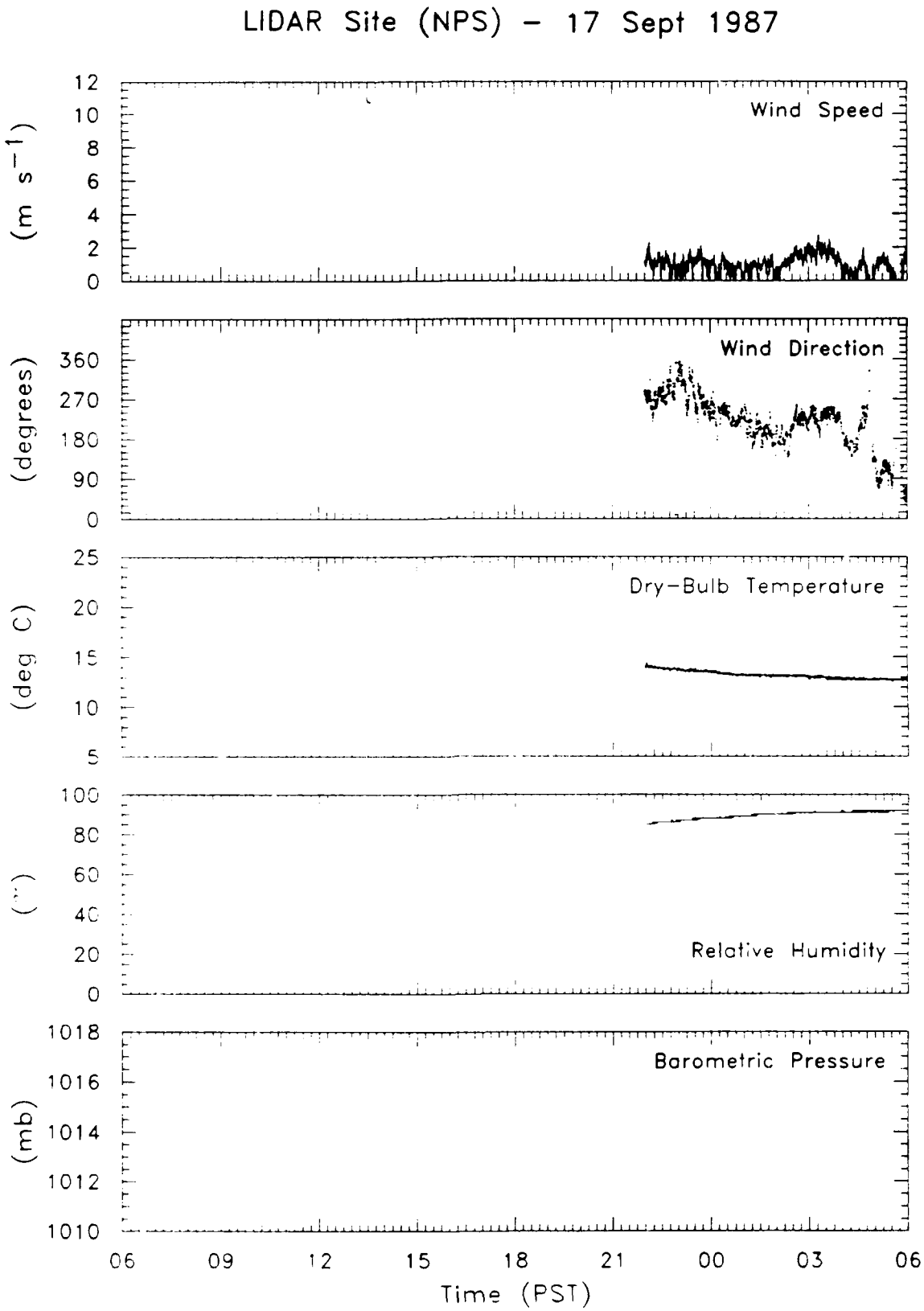
Location	Periods of Operation	Sampling Interval	Elevation	Variables Measured
Lidar (NPS)	2200 9/17--1600 9/21 1000 9/22--1000 9/30	20 s	12 m	P,T,RH,V
North vertex sodar triangle (NPS)	1100 9/17--1800 9/19 1000 9/22--0900 9/24 1600 9/24--1600 9/26 2200 9/26--0400 9/27 1500 9/28--1400 9/30	20 s	27 m	P,T,RH,V
North vertex sodar triangle (NEPRF)	1500 9/11--1600 9/28 1700 9/28--1100 9/30	20 s	27 m	P,T,RH,V
East vertex sodar triangle (NEPRF)	1500 9/11--1000 9/30	20 s	15 m	P,T,RH,V
West vertex sodar triangle (NEPRF)	1500 9/11--1000 9/30	20 s	8 m	P,T,RH,V
R/V Silver Prince (NPS)	0900--1400 9/16 1000--1600 9/18 0800--1600 9/22 1300--2000 9/23 1100--1600 9/24 0800--1600 9/25 1500--2000 9/28 1300--2000 9/29	20 s	5 m	P,T,RH,V

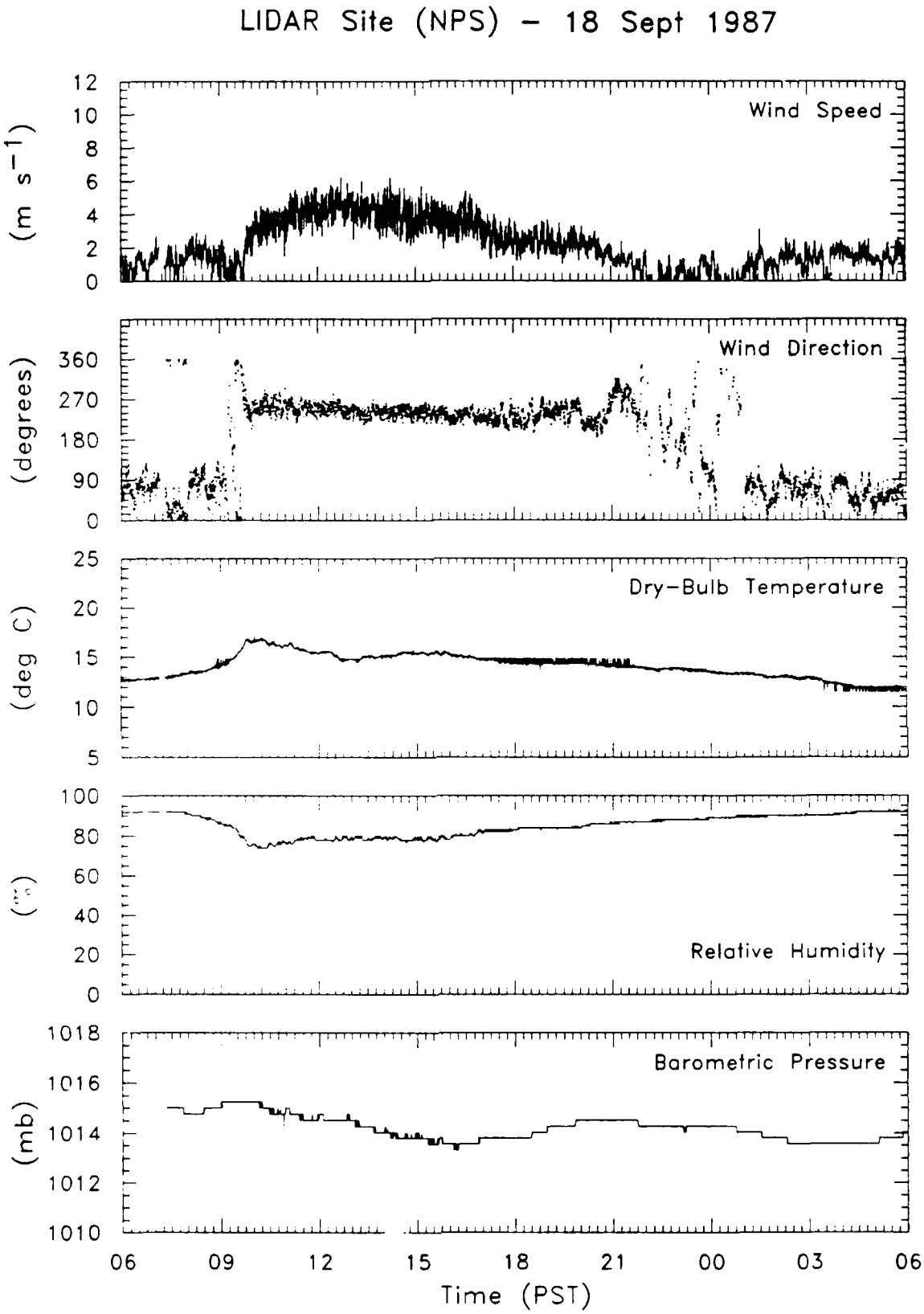
Table 2. Surface meteorology measurements of opportunity during LASBEX. Meteorological variables are pressure adjusted to sea level (PS), temperature (T), relative humidity (RH), vector horizontal wind (V), and shortwave irradiance (R).

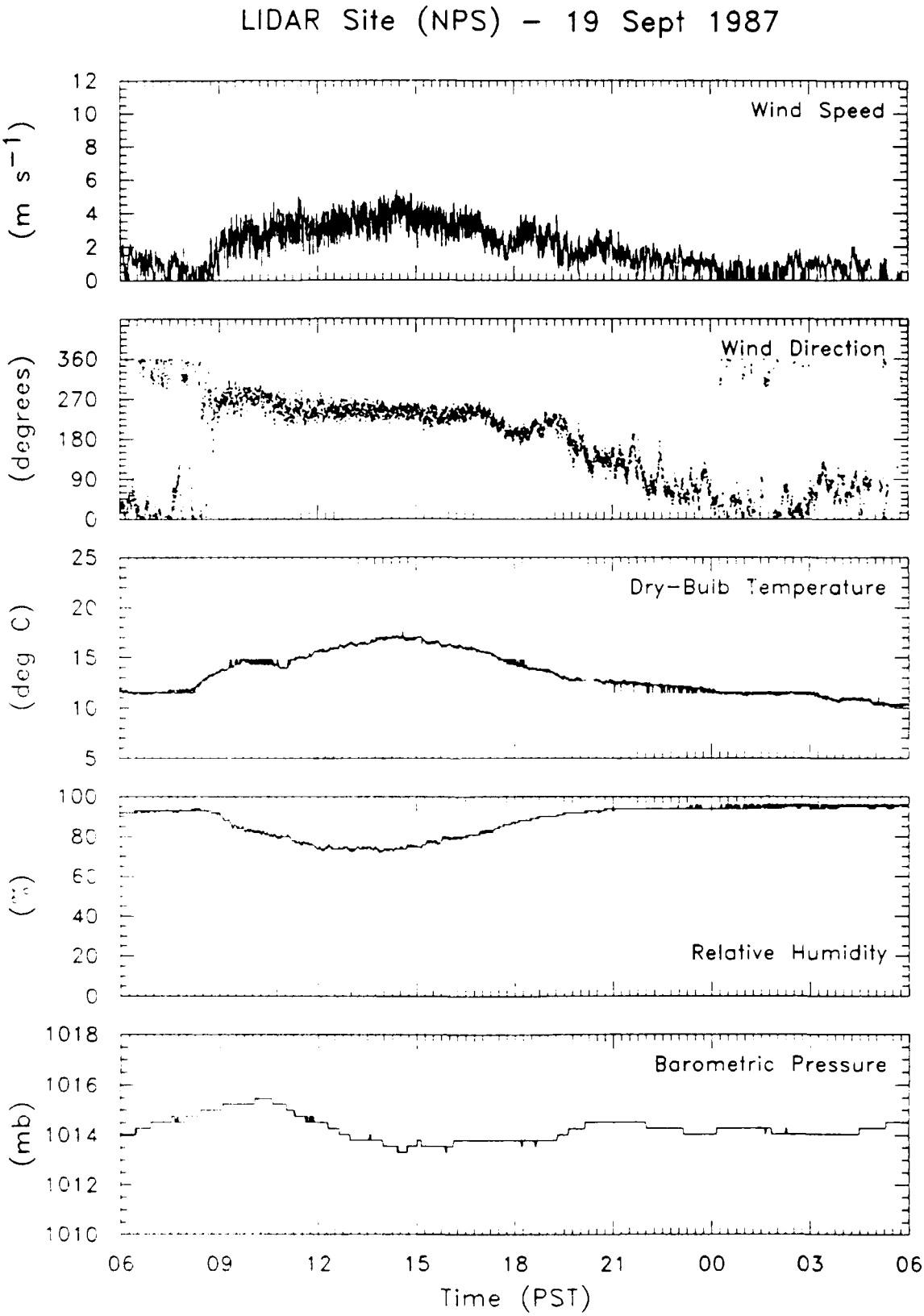
Location	Periods of Operation	Sampling Interval	Elevation	Variables Measured
Moss Landing Marine Laboratories	Continuous except 0000 9/26 –1100 9/28	5 min	20 m 14 m (PS)	PS,T,V,R
Marina Beach (Scripps Institution of Oceanography)	Almost continuous	8 s	27 m	V
Monterey Bay Aquarium	Continuous beginning 1000 9/18	5 min	11 m 5.5 m (PS)	PS,T,V,R
Monterey Peninsula Airport	Intermittent	1 hr	67 m	PS,T,RH,V
Fritzsche Army Airfield (Ft. Ord)	Intermittent	1 hr	41 m	PS,T,RH,V
Salinas Airport	Intermittent	1 hr	23 m	PS,T,RH,V
Paso Robles Airport	Intermittent	1 hr	249 m	PS,T,RH,V

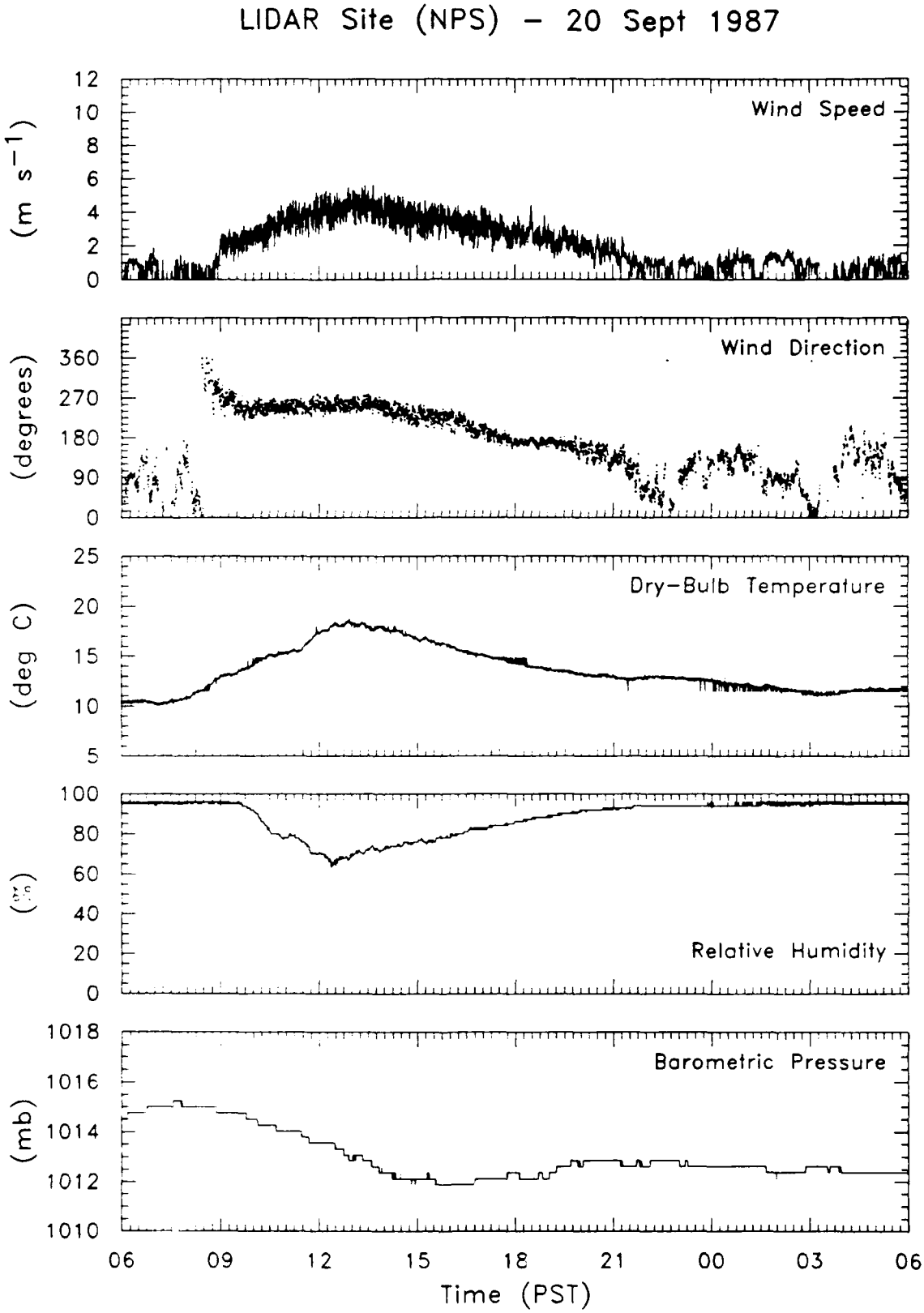
3. TIME SERIES, LIDAR SITE

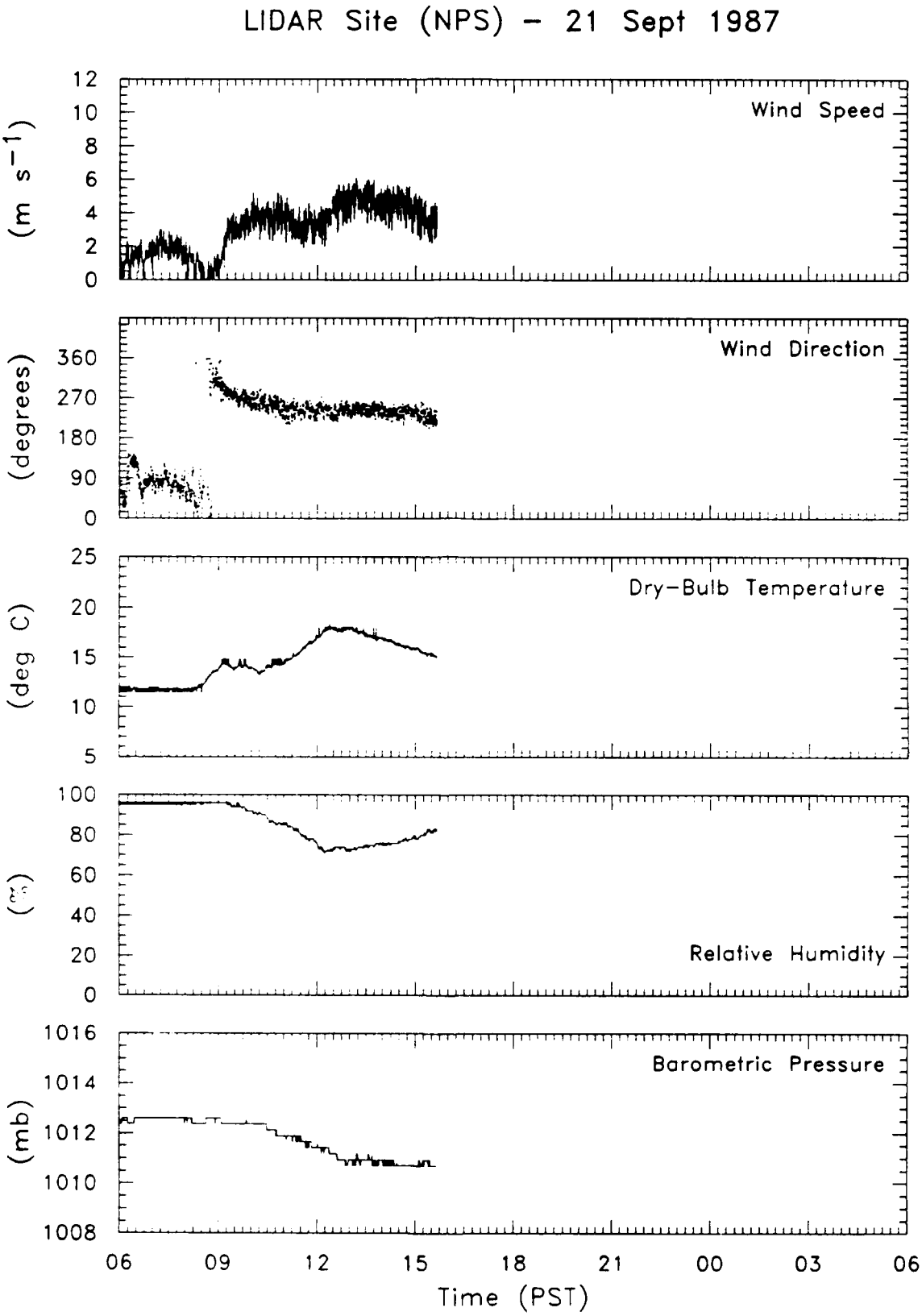
The following pages contain graphs of the time series obtained from the Coastal Climate Weatherpak system operated by the Naval Postgraduate School at the lidar site near Moss Landing (Fig. 1).

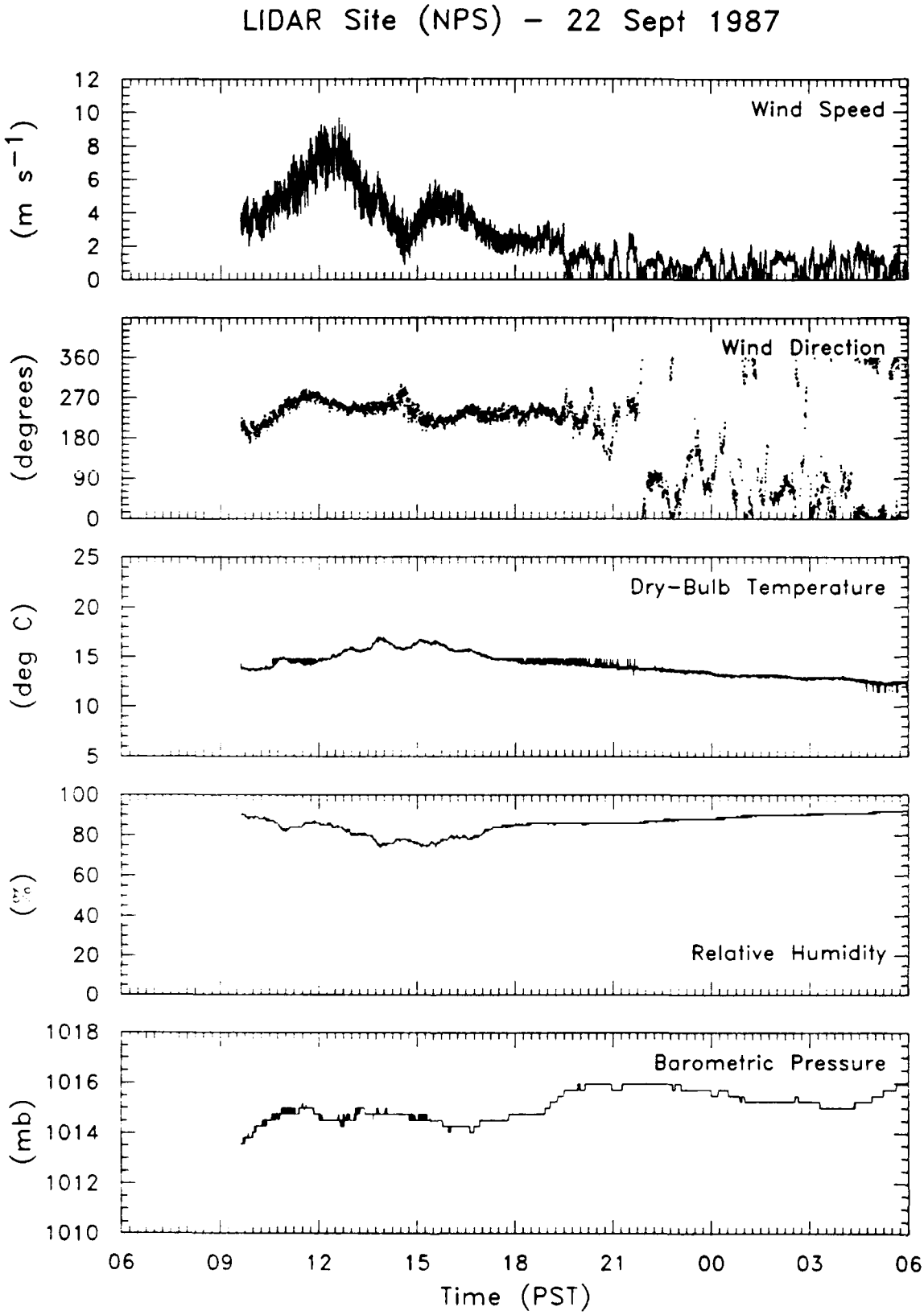

LIDAR Site (NPS) - 17 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1018
1016
1014
1012
1010
06
09
12
15
18
21
00
03
06
Time (PST)

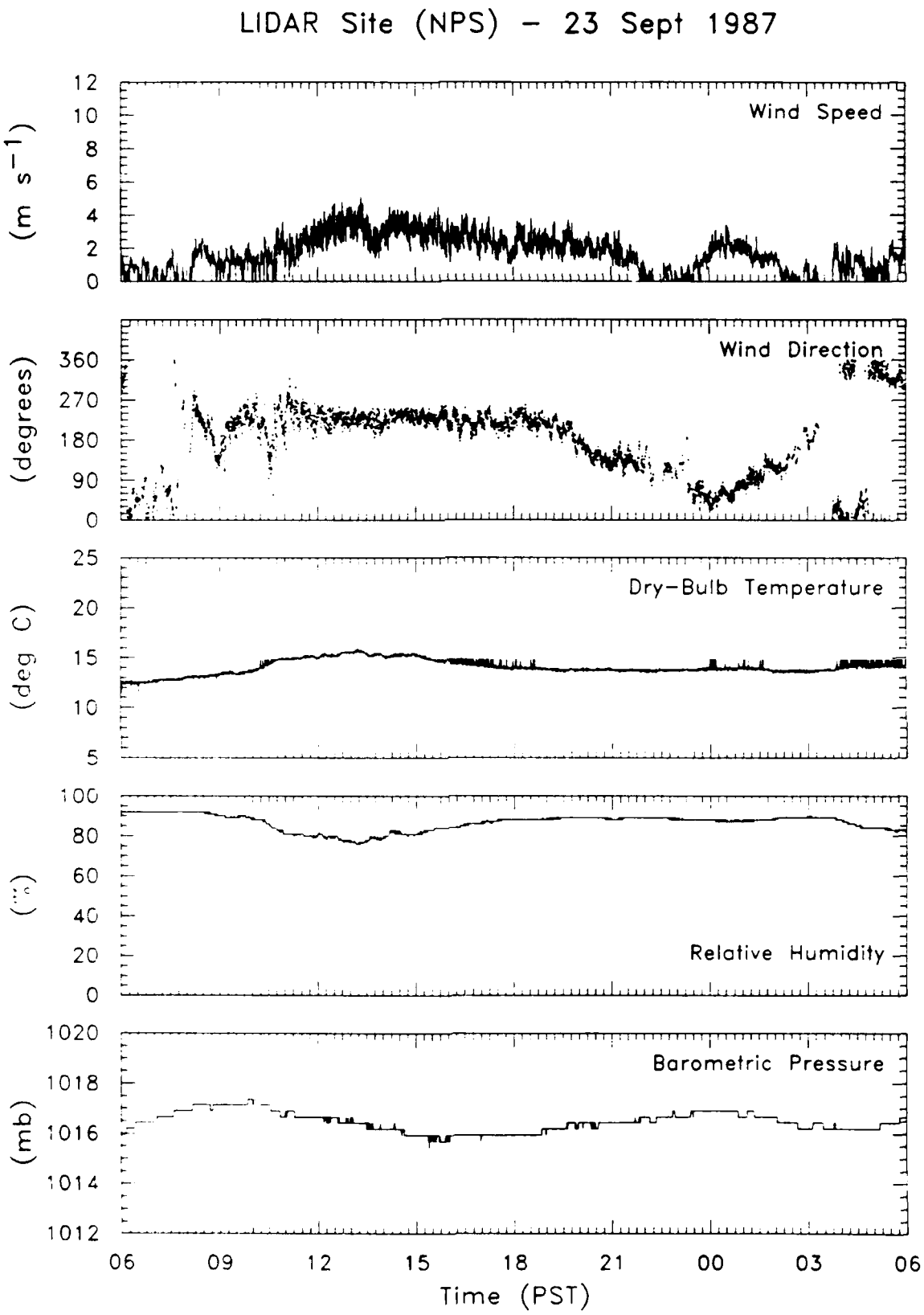

LIDAR Site (NPS) - 18 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
100
80
60
40
20
0
Barometric Pressure
(mb)
1018
1016
1014
1012
1010
06
09
12
15
18
21
00
03
06
Time (PST)

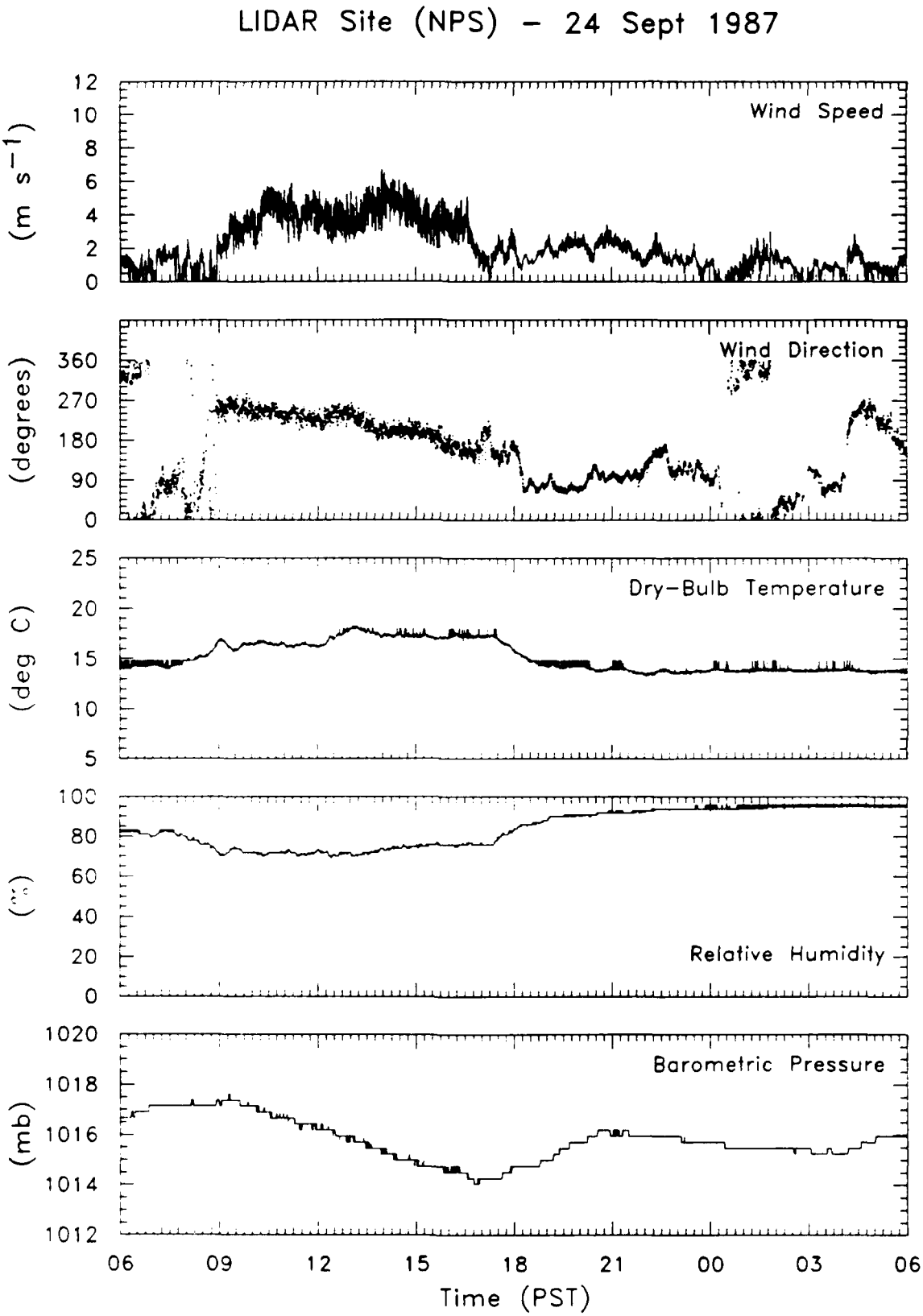

LIDAR Site (NPS) - 19 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1018
1016
1014
1012
1010
06
09
12
15
18
21
00
03
06
Time (PST)

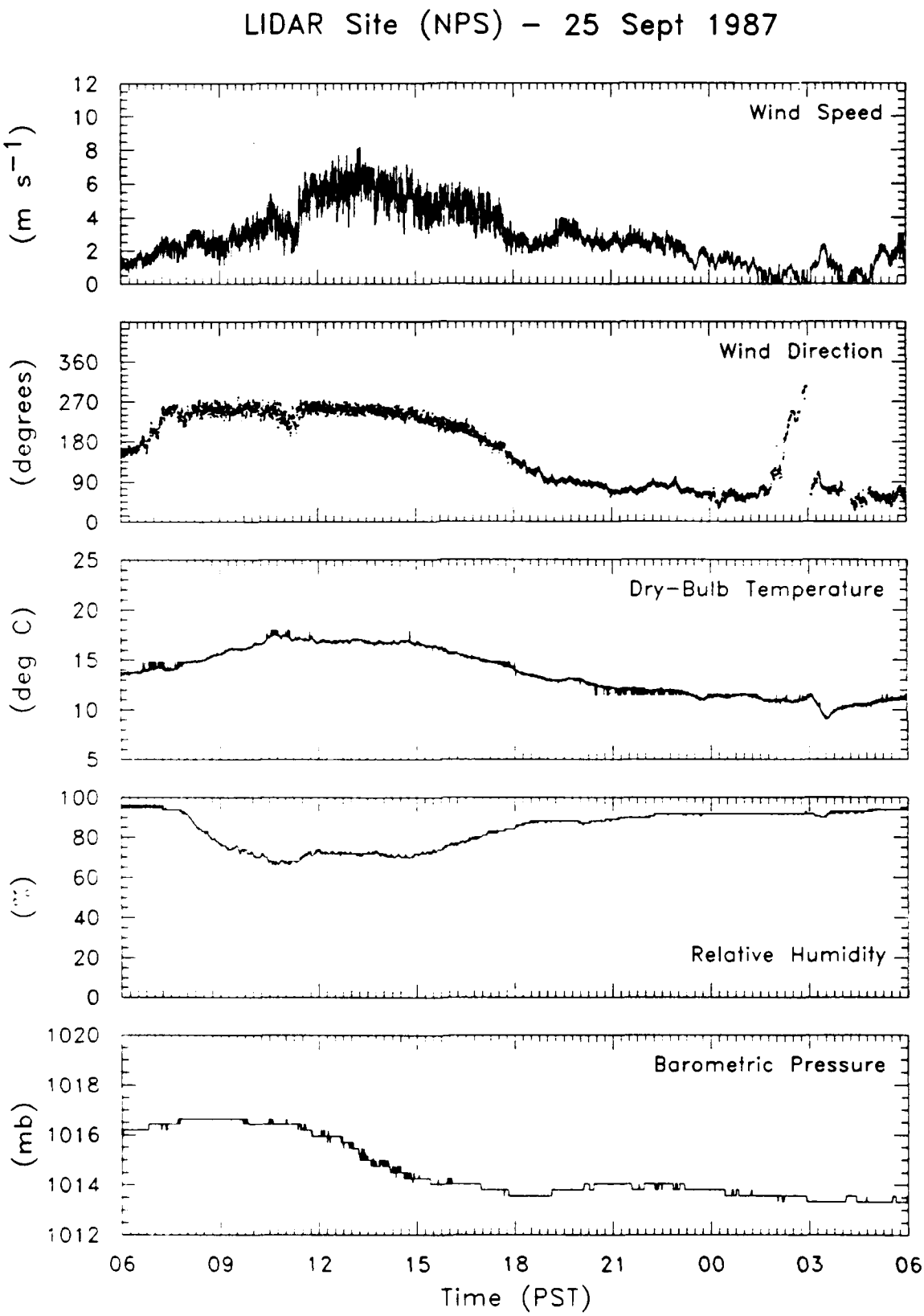

LIDAR Site (NPS) - 20 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1018
1016
1014
1012
1010
06
09
12
15
18
21
00
03
06
Time (PST)

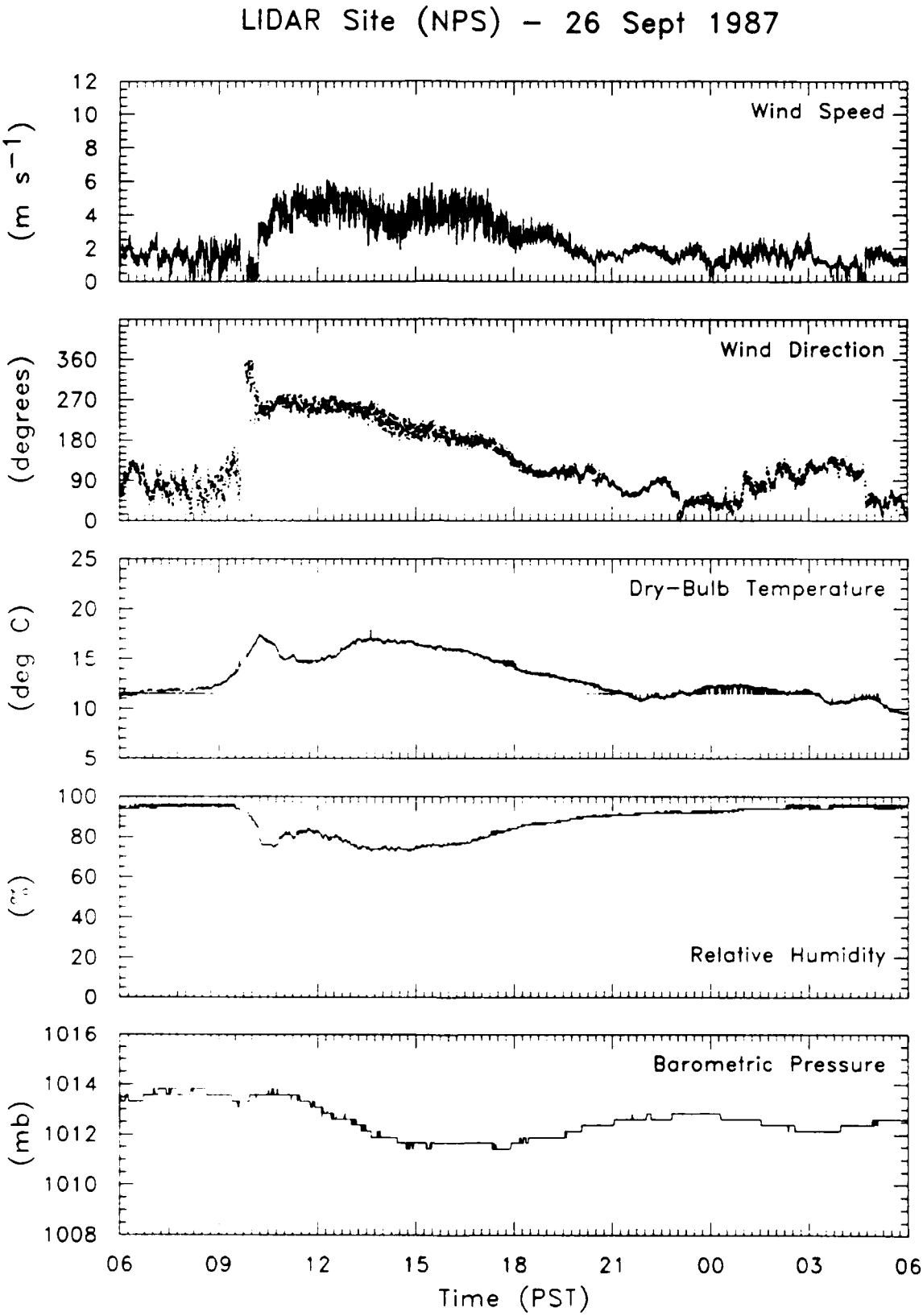

LIDAR Site (NPS) - 21 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1016
1014
1012
1010
1008
06
09
12
15
18
21
00
03
06
Time (PST)

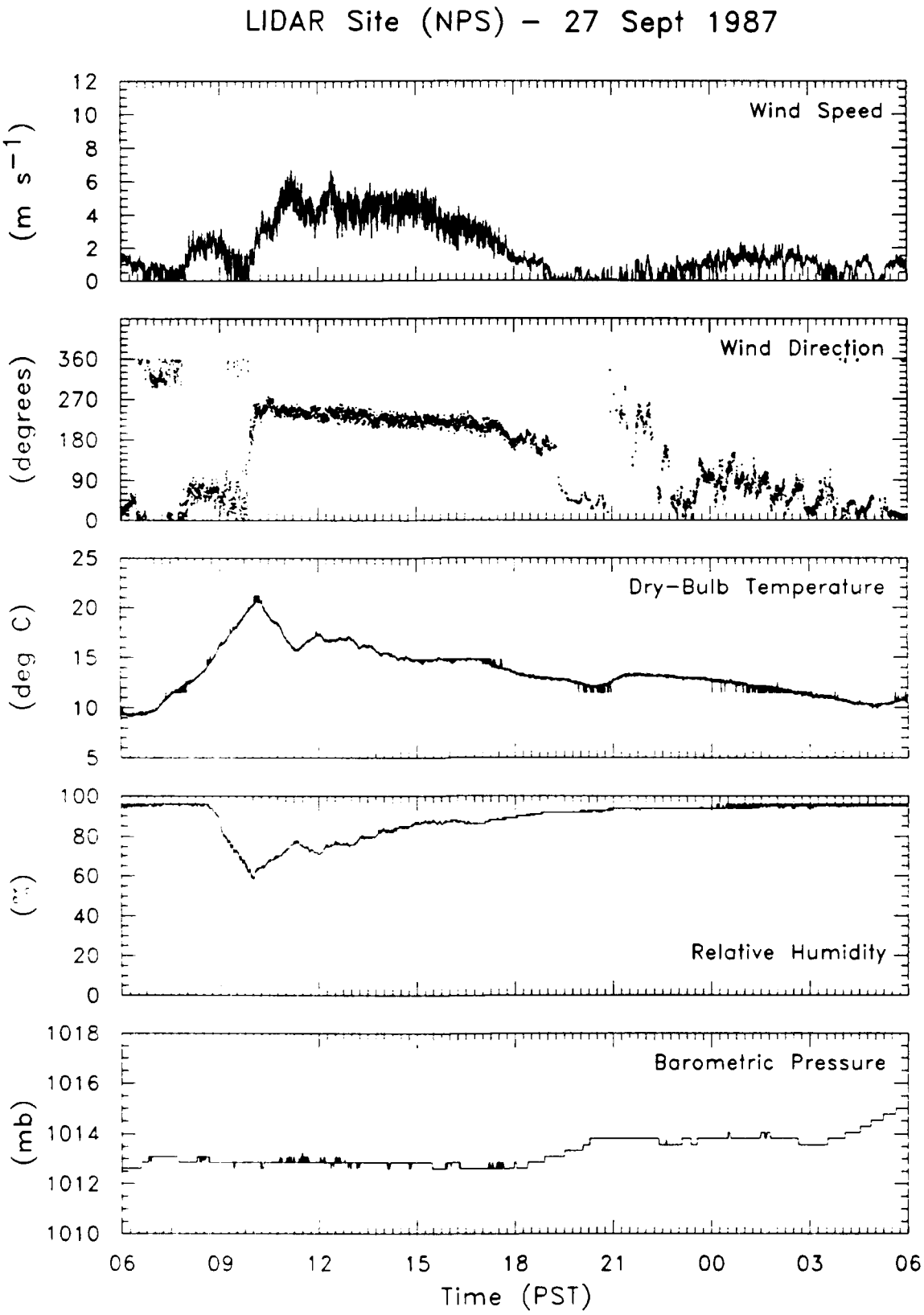

LIDAR Site (NPS) - 22 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1018
1016
1014
1012
1010
06
09
12
15
18
21
00
03
06
Time (PST)

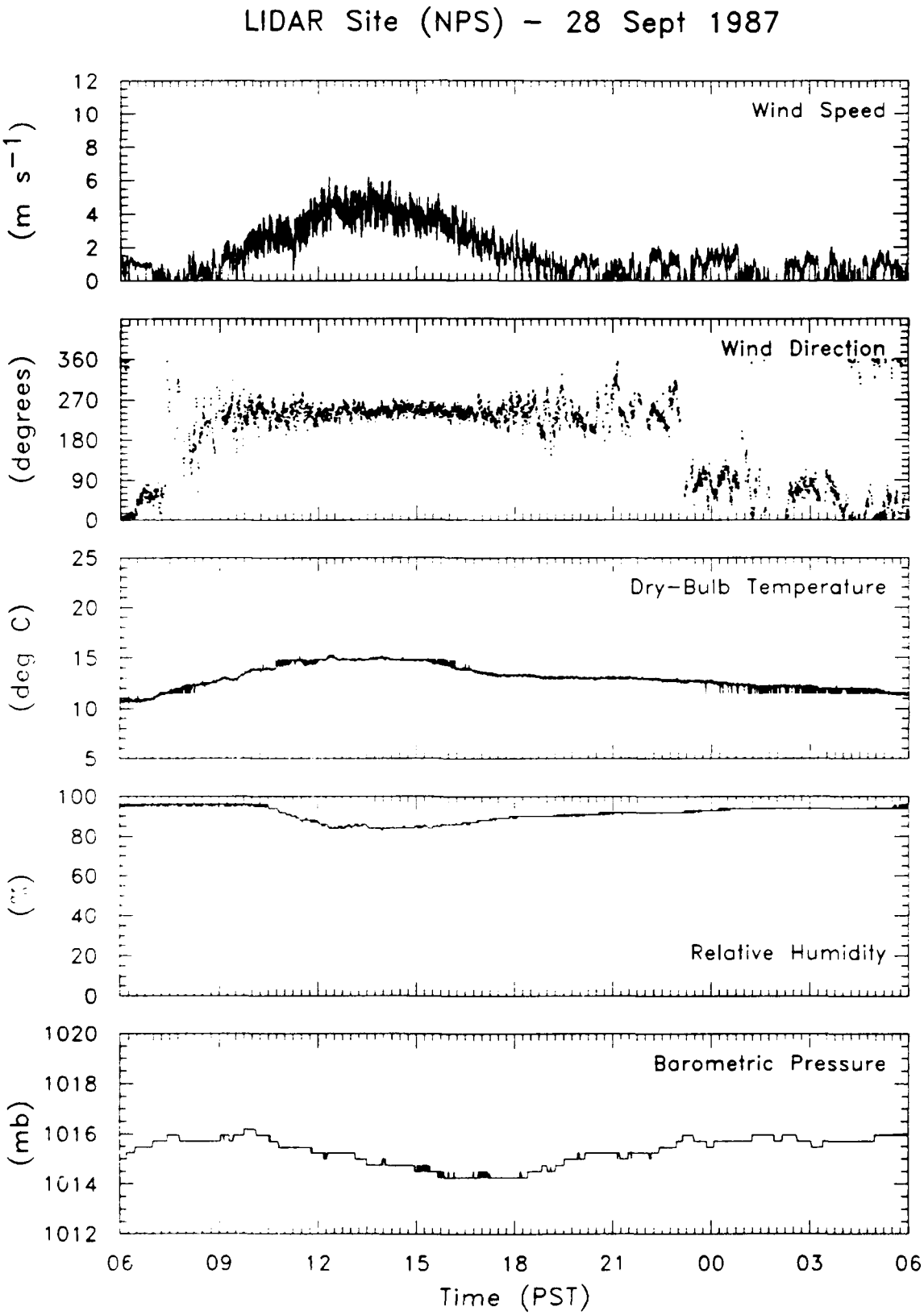

LIDAR Site (NPS) - 23 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1020
1018
1016
1014
1012
06
09
12
15
18
21
00
03
06
Time (PST)

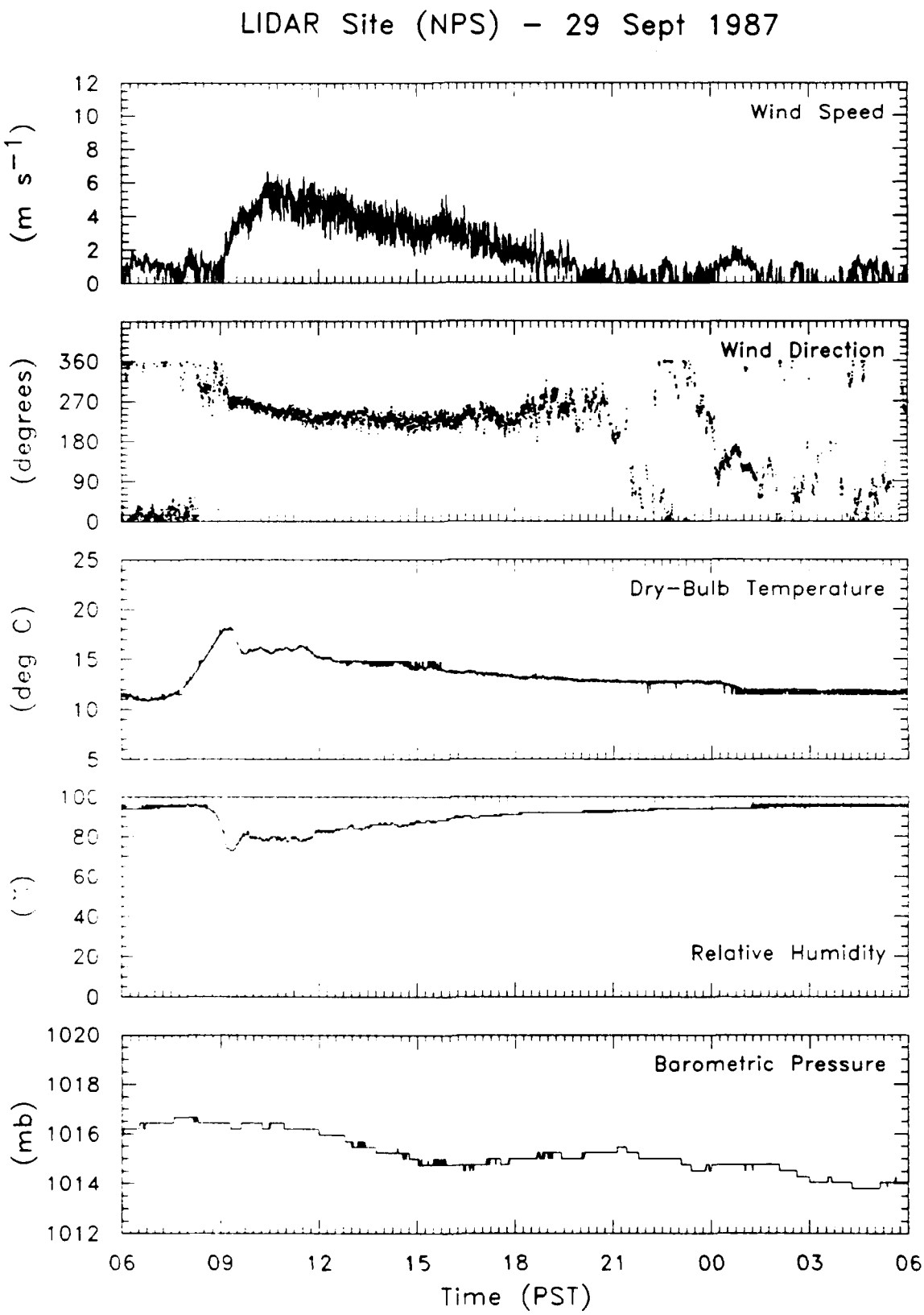

LIDAR Site (NPS) - 24 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1020
1018
1016
1014
1012
06
09
12
15
18
21
00
03
06
Time (PST)

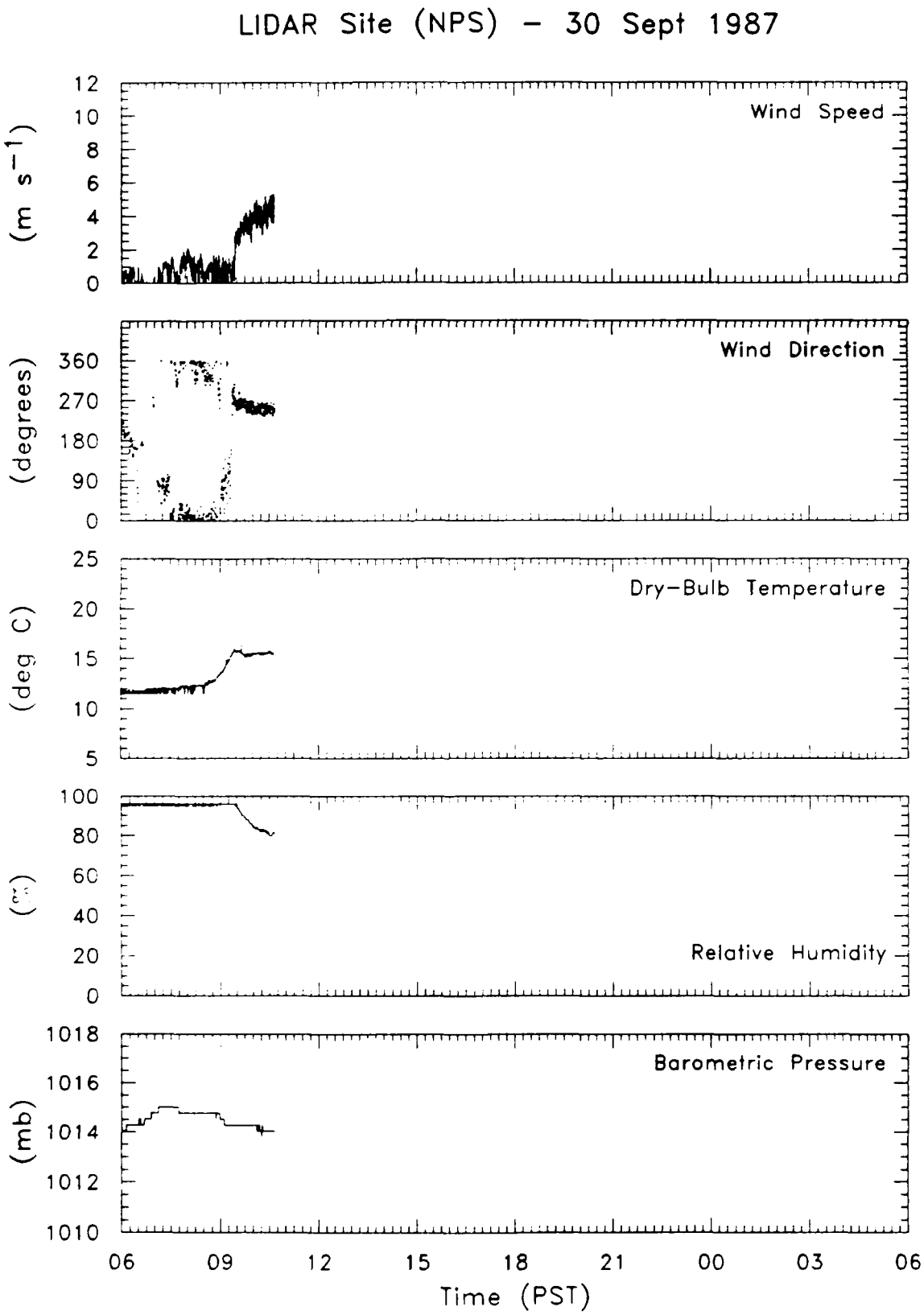

LIDAR Site (NPS) - 25 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1020
1018
1016
1014
1012
06
09
12
15
18
21
00
03
06
Time (PST)


LIDAR Site (NPS) - 26 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1016
1014
1012
1010
1008
06
09
12
15
18
21
00
03
06
Time (PST)


LIDAR Site (NPS) - 27 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1018
1016
1014
1012
1010
06
09
12
15
18
21
00
03
06
Time (PST)

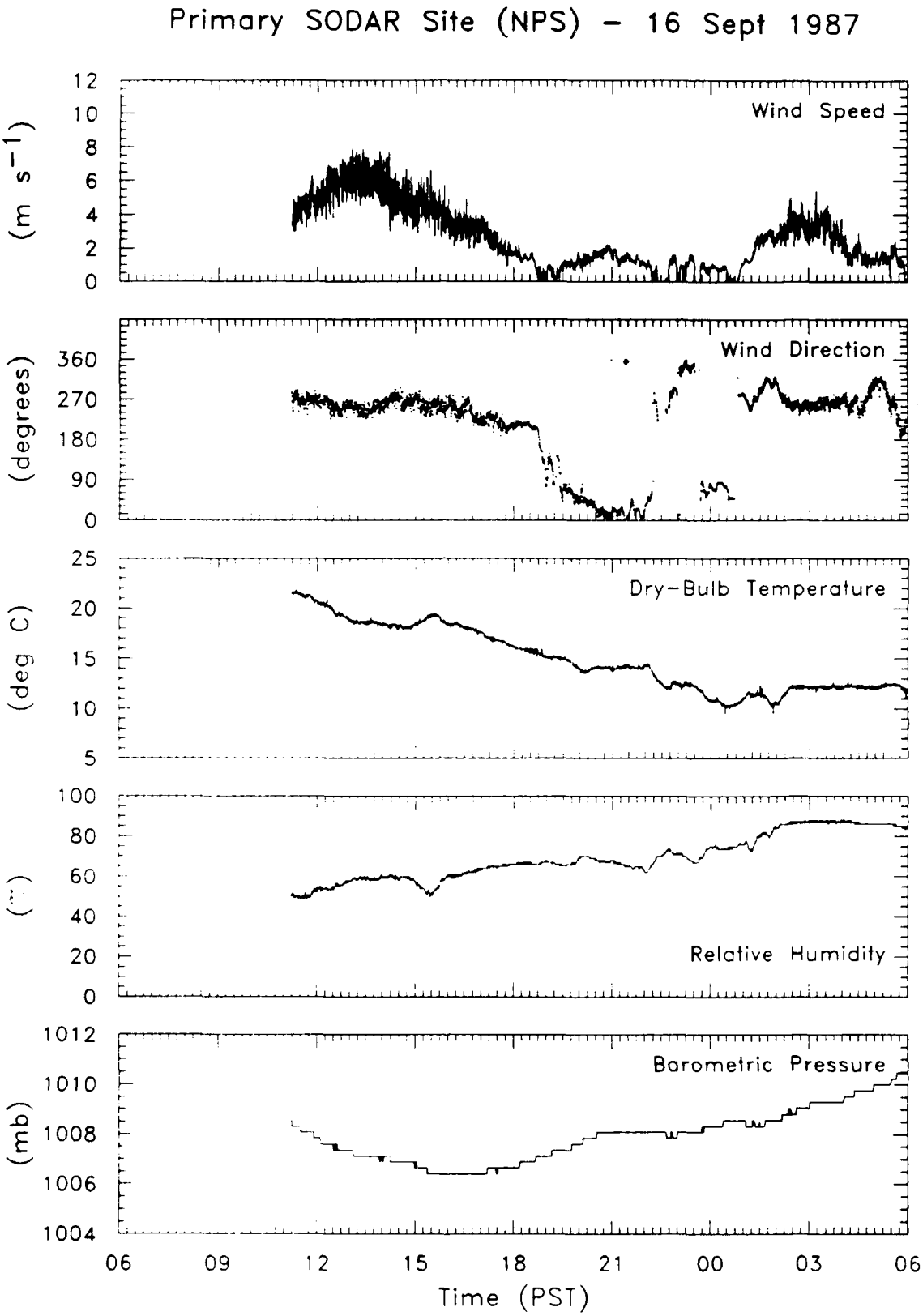

LIDAR Site (NPS) - 28 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1020
1018
1016
1014
1012
06
09
12
15
18
21
00
03
06
Time (PST)

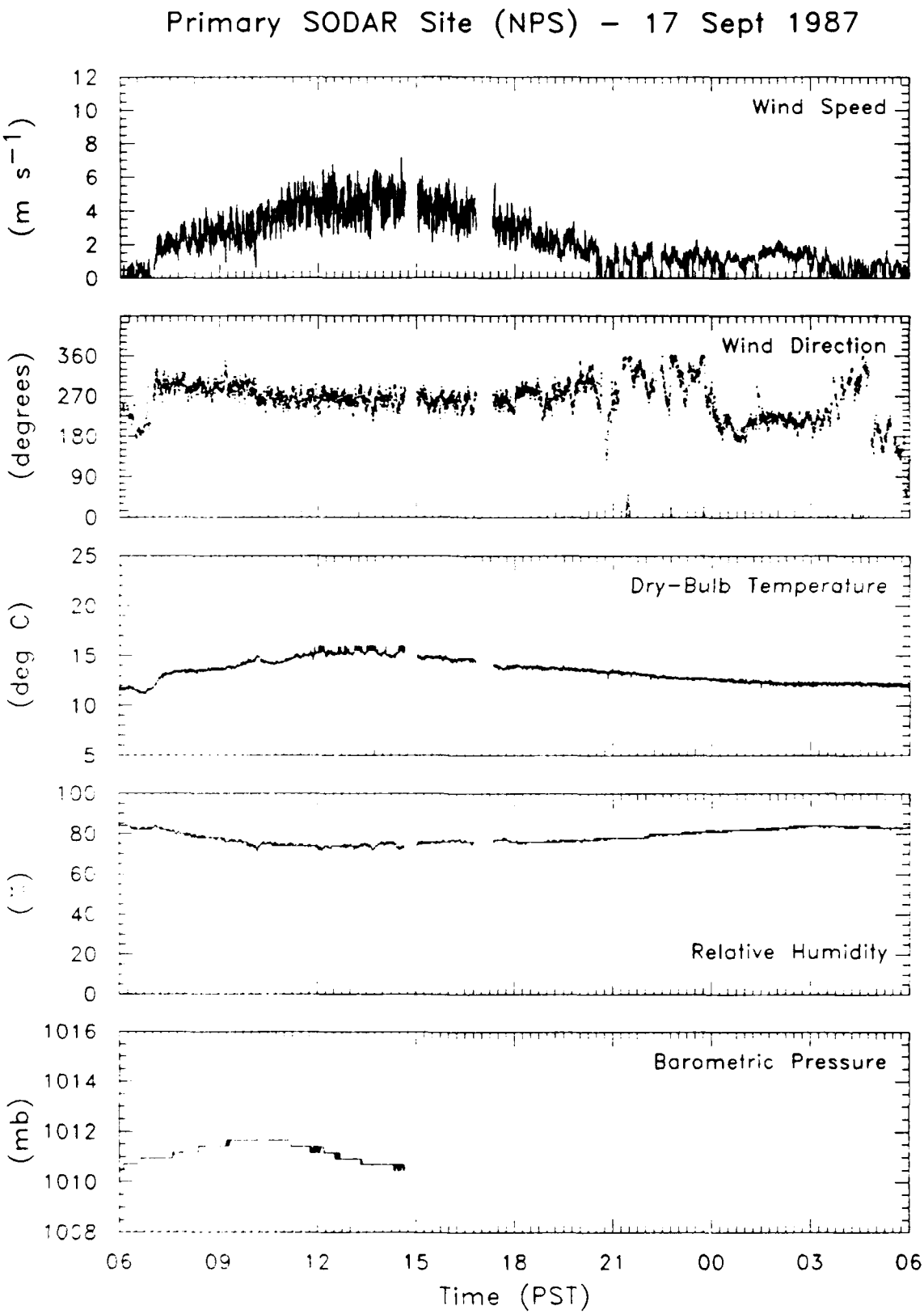

LIDAR Site (NPS) - 29 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
100
80
60
40
20
0
Barometric Pressure
(mb)
1020
1018
1016
1014
1012
06
09
12
15
18
21
00
03
06
Time (PST)

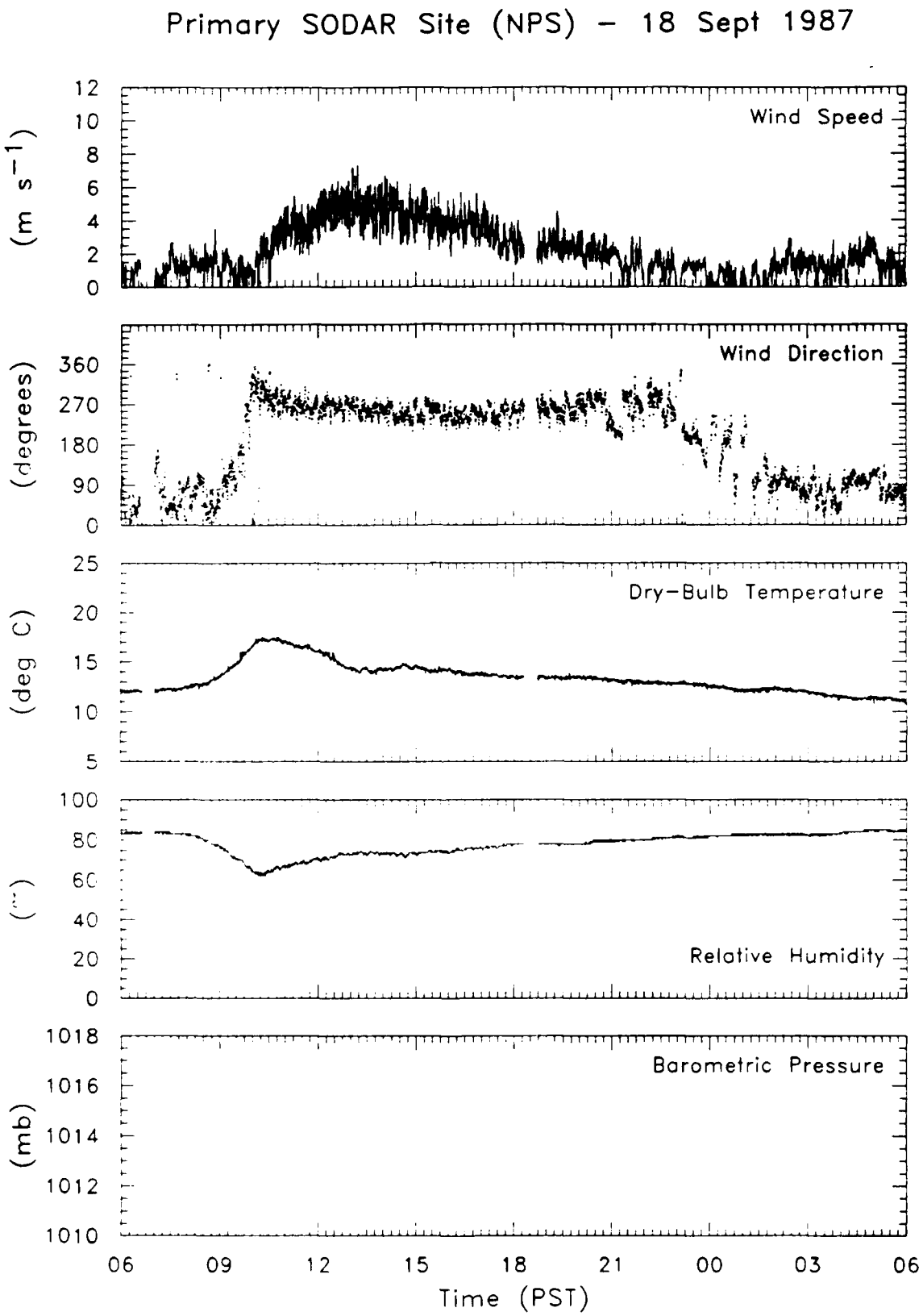

LIDAR Site (NPS) - 30 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1018
1016
1014
1012
1010
06
09
12
15
18
21
00
03
06
Time (PST)

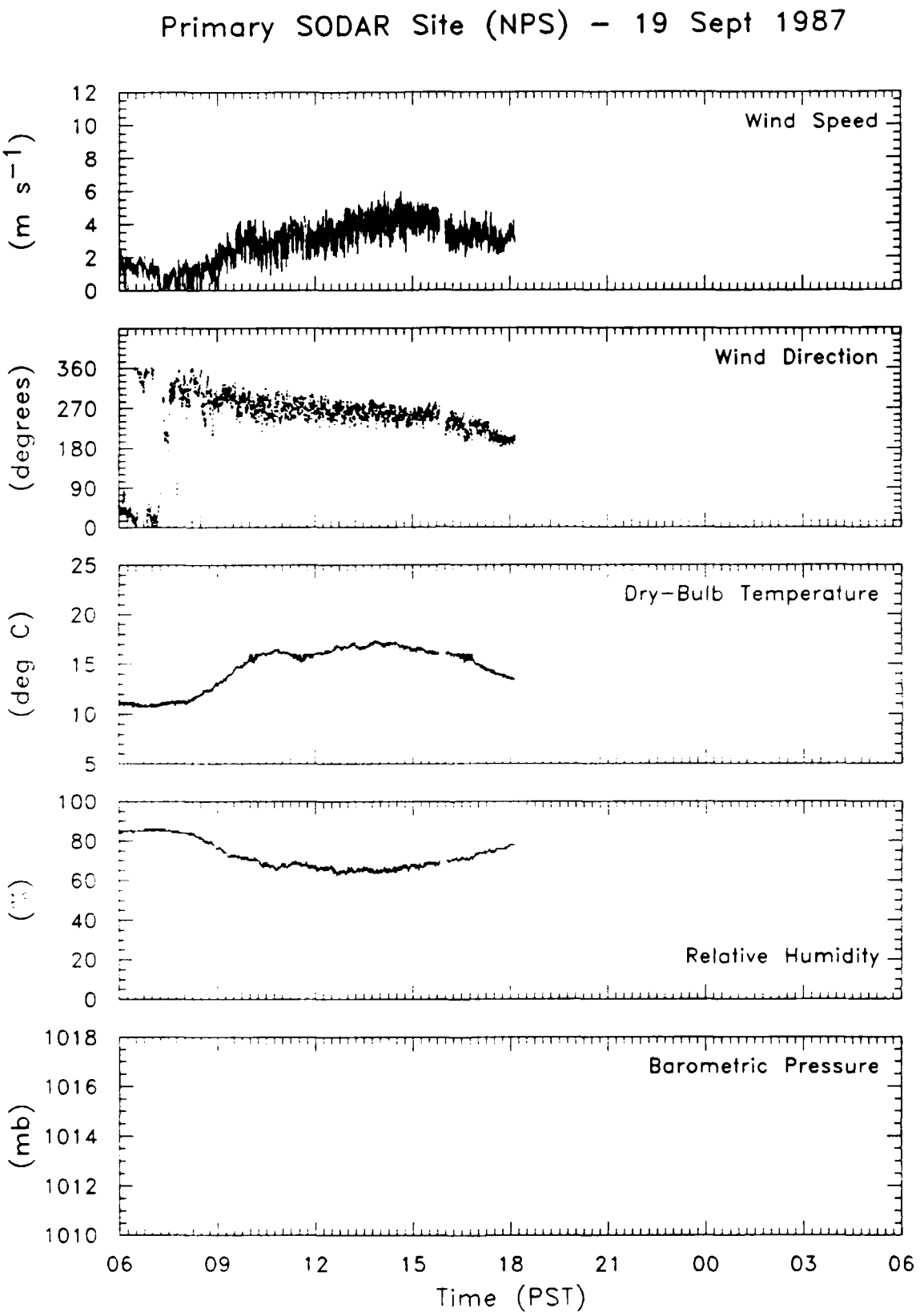
4. TIME SERIES, PRIMARY SODAR SITE--NPS

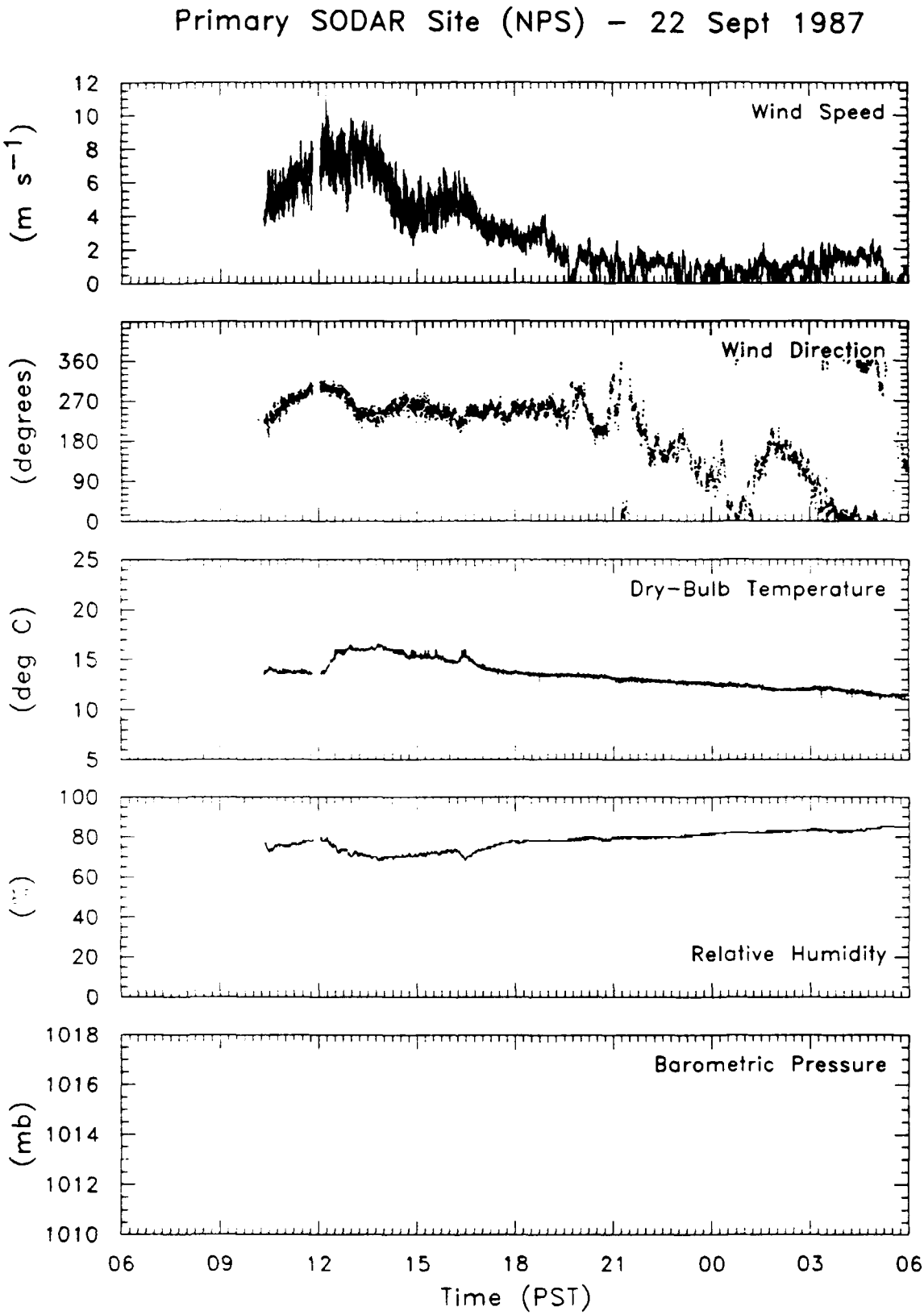
The following pages contain graphs of the time series obtained from the Coastal Climate Weatherpak system which NPS operated at the north vertex of the sodar triangle (Fig. 1).

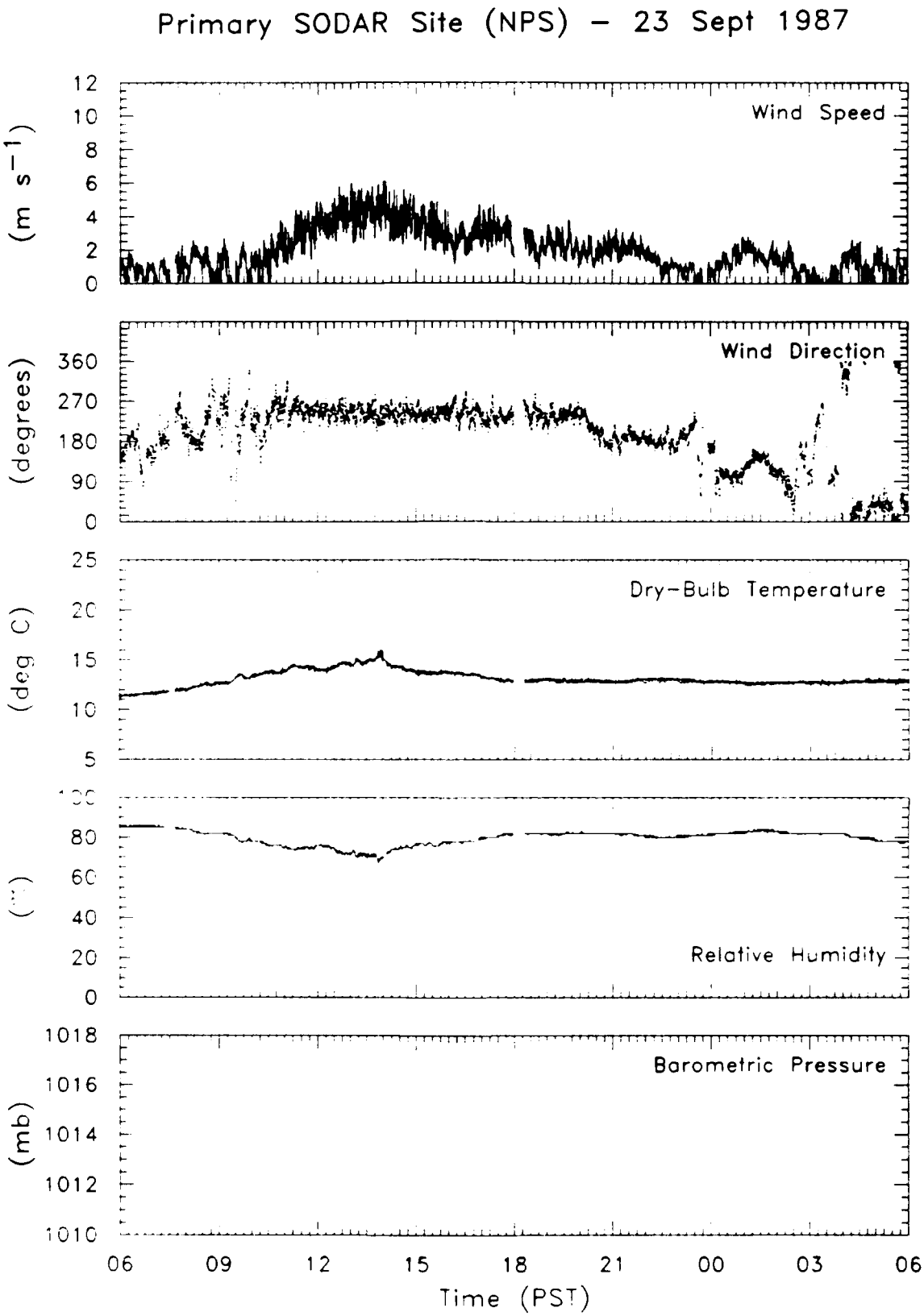

Primary SODAR Site (NPS) - 16 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
100
80
60
40
20
0
Barometric Pressure
(mb)
1012
1010
1008
1006
1004
06
09
12
15
18
21
00
03
06
Time (PST)

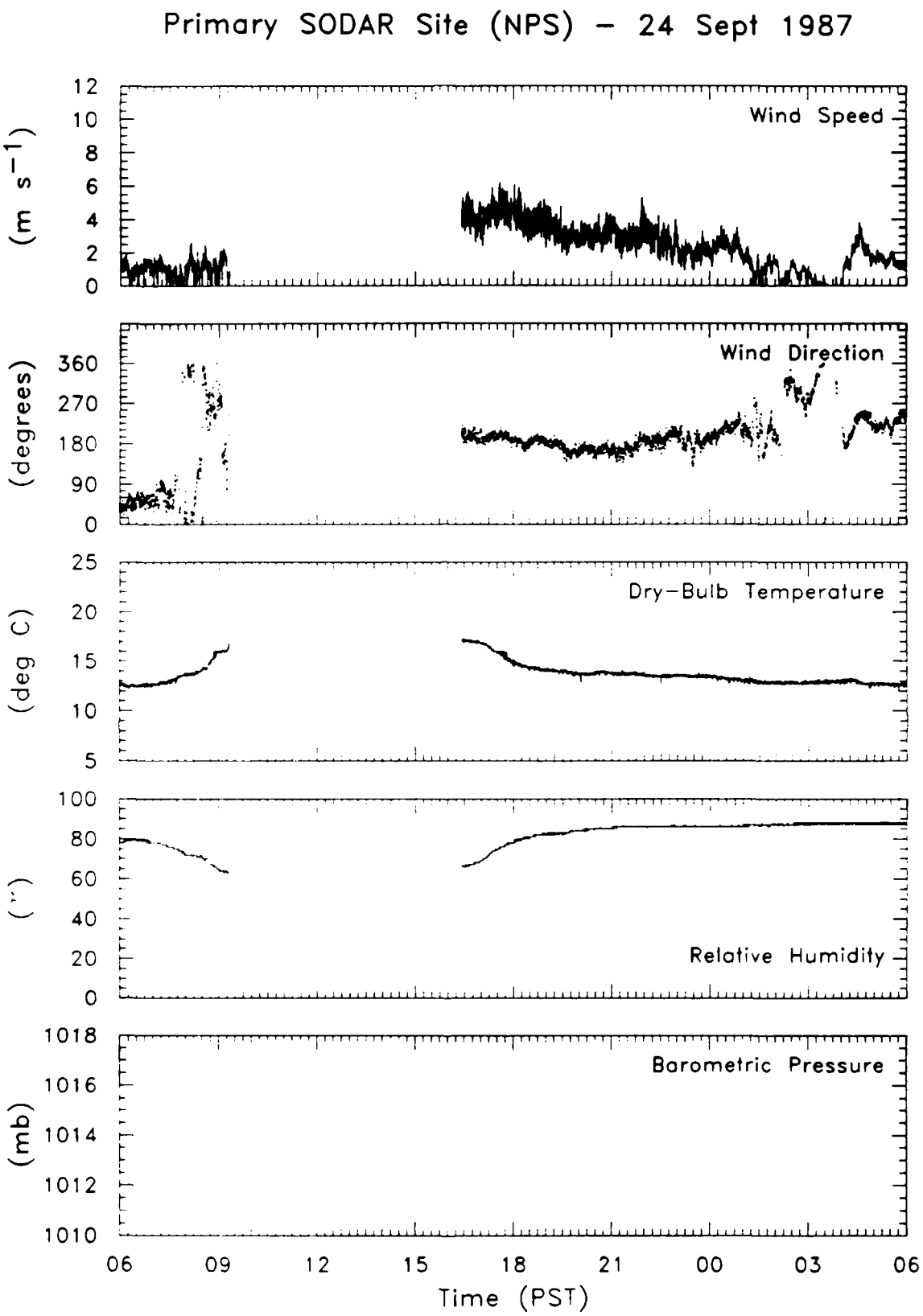

Primary SODAR Site (NPS) - 17 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
100
80
60
40
20
0
Barometric Pressure
(mb)
1016
1014
1012
1010
1008
06
09
12
15
18
21
00
03
06
Time (PST)

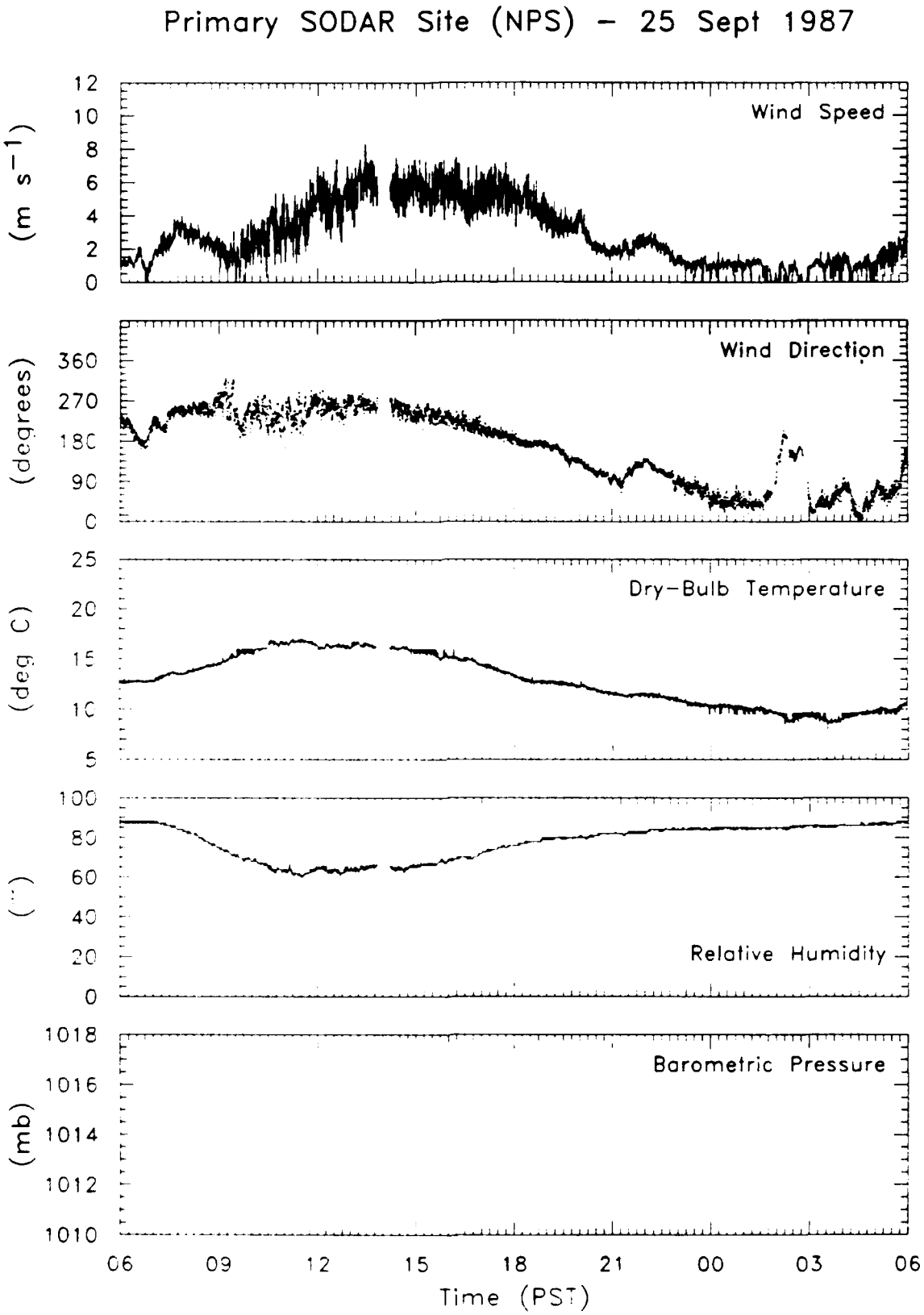

Primary SODAR Site (NPS) - 18 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
100
80
60
40
20
0
Barometric Pressure
(mb)
1018
1016
1014
1012
1010
06
09
12
15
18
21
00
03
06
Time (PST)

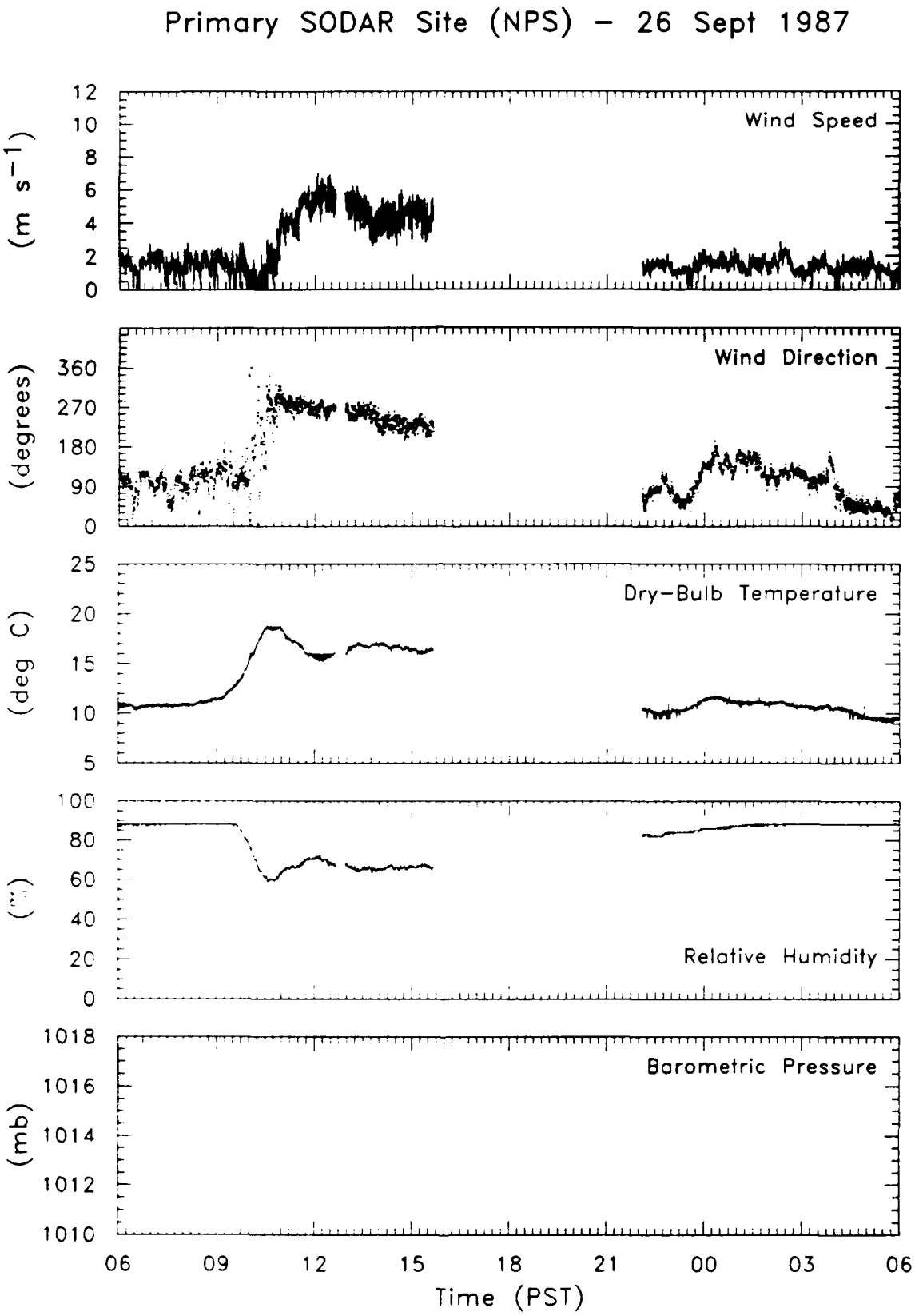

Primary SODAR Site (NPS) - 19 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1018
1016
1014
1012
1010
06
09
12
15
18
21
00
03
06
Time (PST)

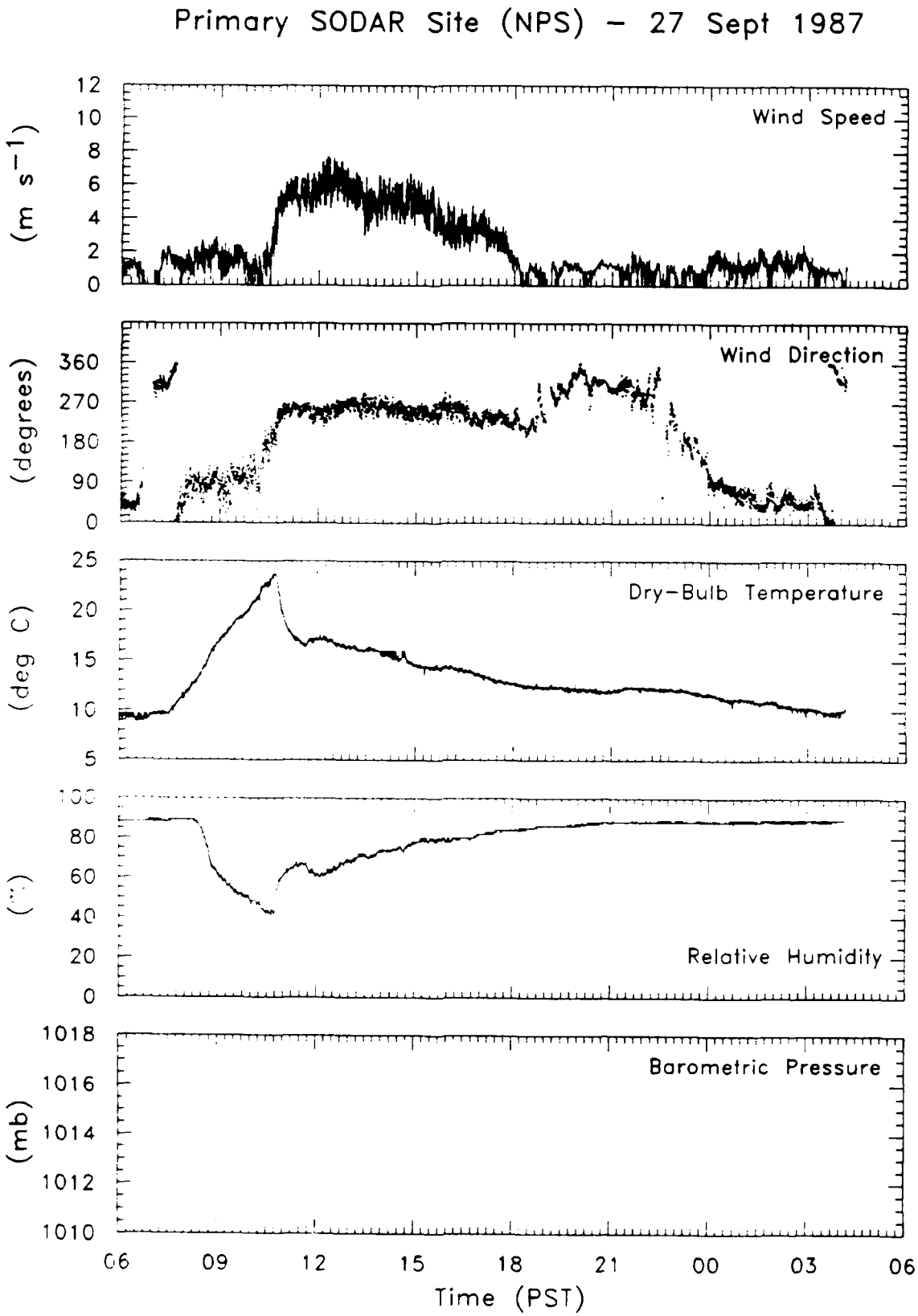

Primary SODAR Site (NPS) - 22 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
100
80
60
40
20
0
Barometric Pressure
(mb)
1018
1016
1014
1012
1010
06
09
12
15
18
21
00
03
06
Time (PST)

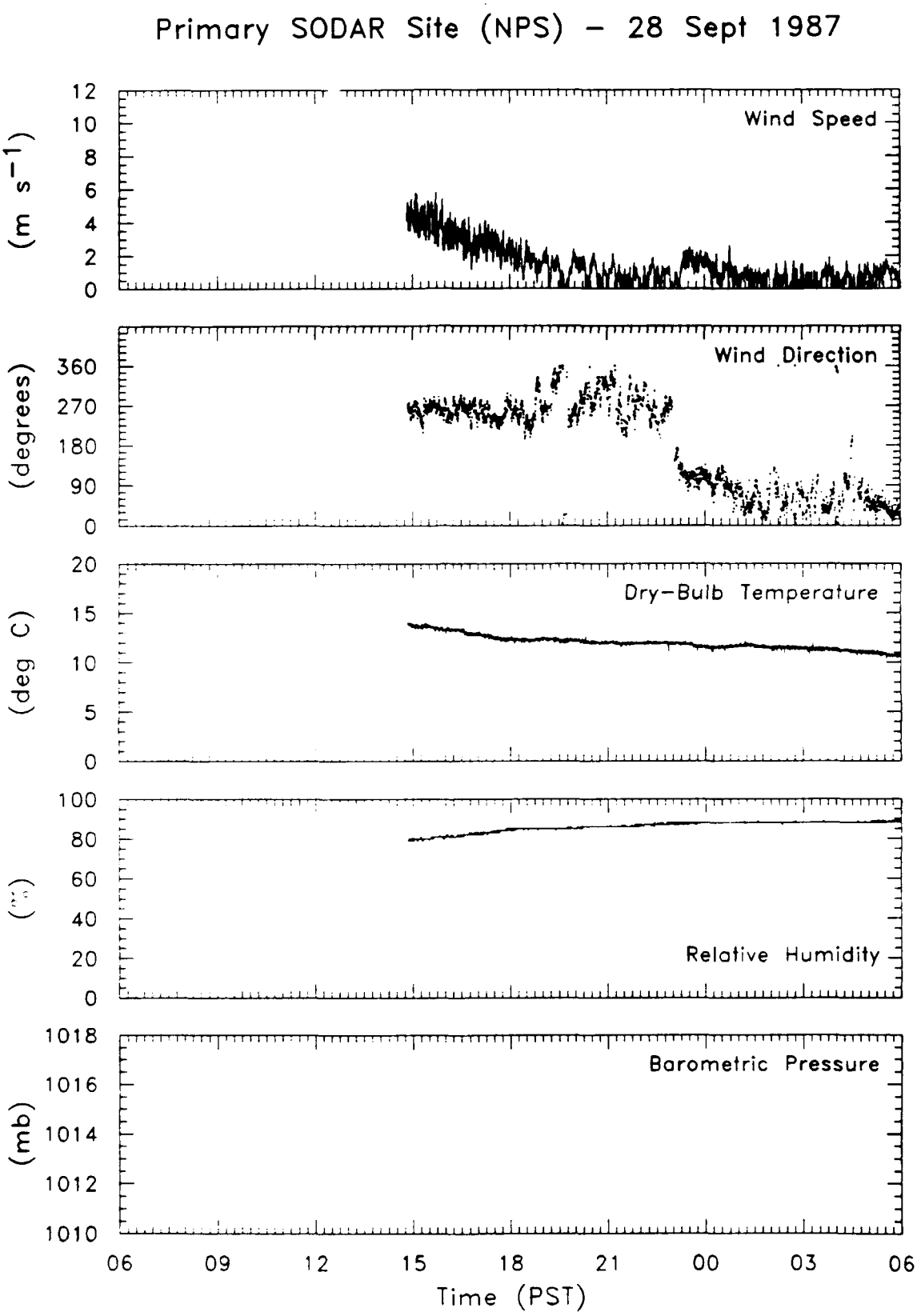

Primary SODAR Site (NPS) - 23 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
80
60
40
20
0
Barometric Pressure
(mb)
1018
1016
1014
1012
1010
06
09
12
15
18
21
00
03
06
Time (PST)

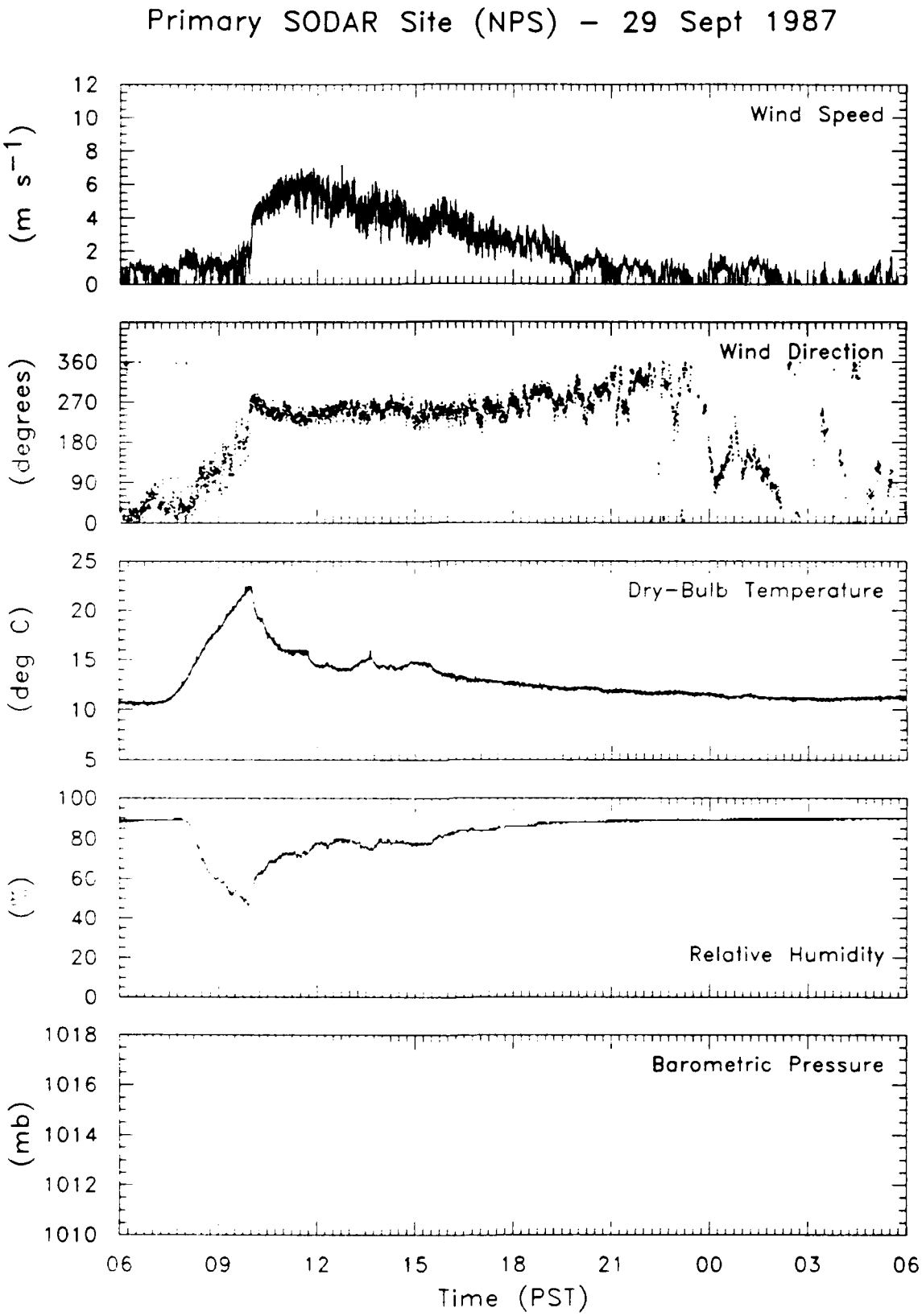

Primary SODAR Site (NPS) - 24 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
100
80
60
40
20
0
Barometric Pressure
(mb)
1018
1016
1014
1012
1010
06
09
12
15
18
21
00
03
06
Time (PST)

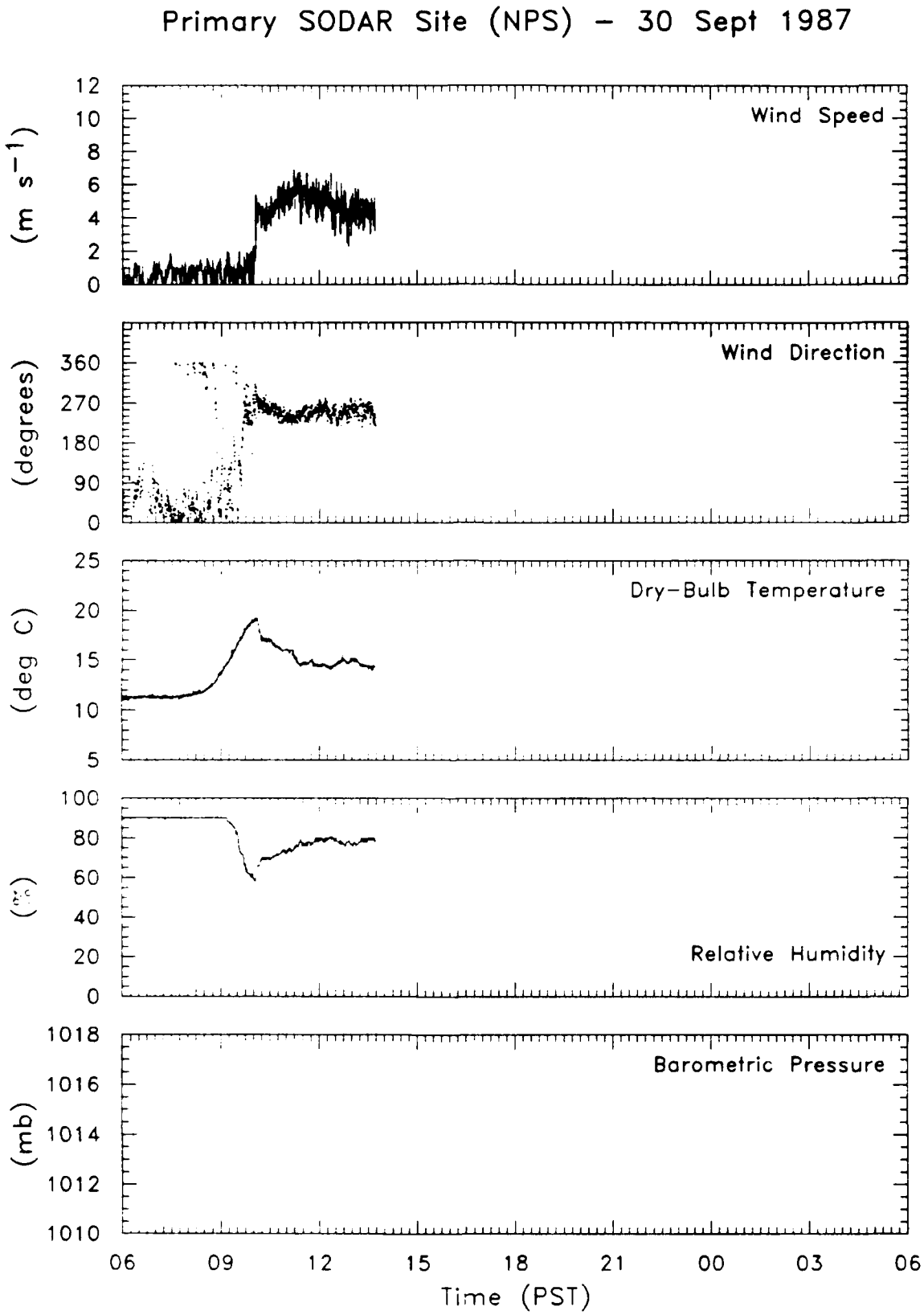

Primary SODAR Site (NPS) - 25 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1018
1016
1014
1012
1010
06
09
12
15
18
21
00
03
06
Time (PST)


Primary SODAR Site (NPS) - 26 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
100
80
60
40
20
0
Barometric Pressure
(mb)
1018
1016
1014
1012
1010
06
09
12
15
18
21
00
03
06
Time (PST)


Primary SODAR Site (NPS) - 27 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
80
60
40
20
0
Barometric Pressure
(mb)
1018
1016
1014
1012
1010
06
09
12
15
18
21
00
03
06
Time (PST)

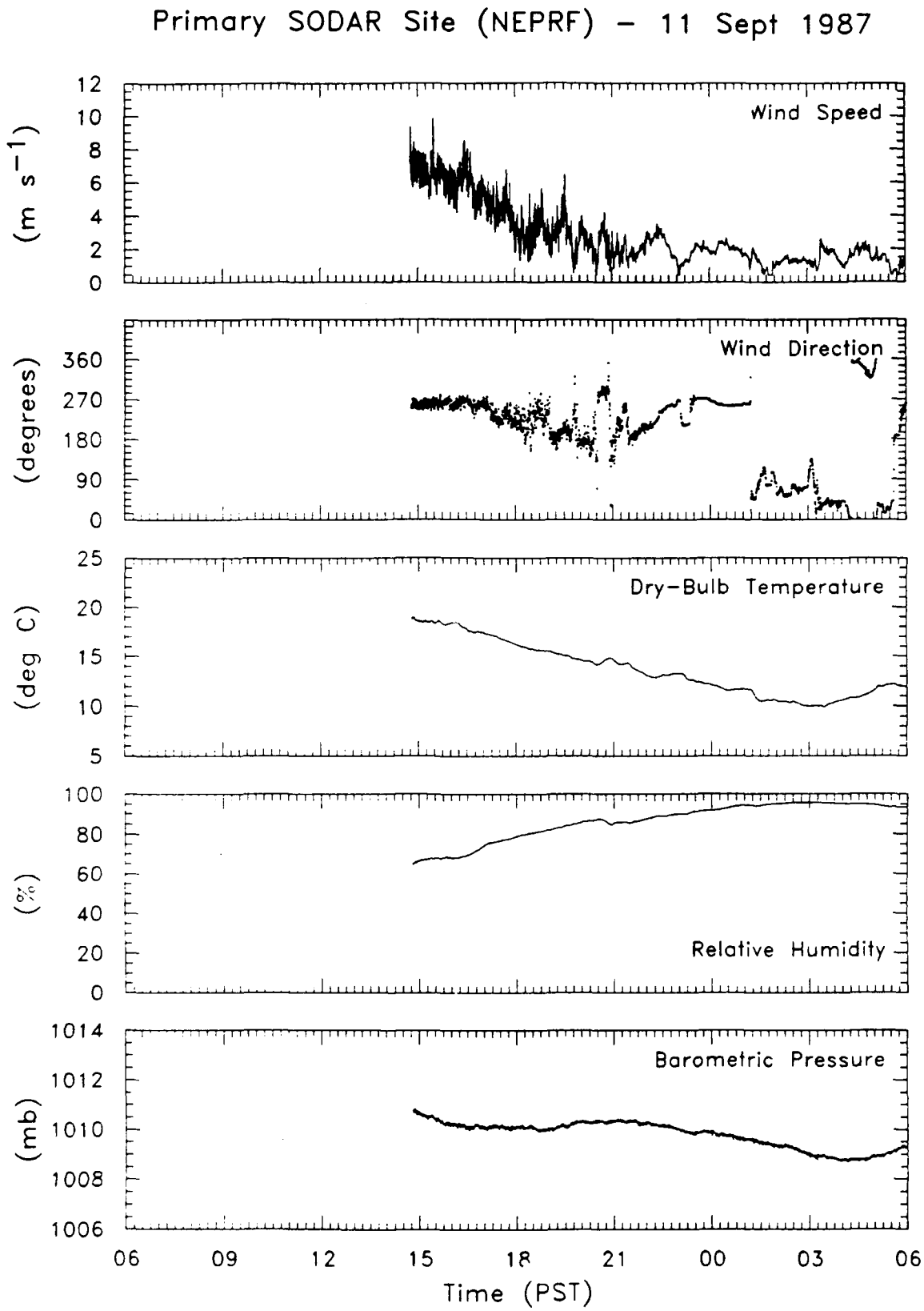

Primary SODAR Site (NPS) - 28 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
20
15
10
5
0
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1018
1016
1014
1012
1010
06
09
12
15
18
21
00
03
06
Time (PST)

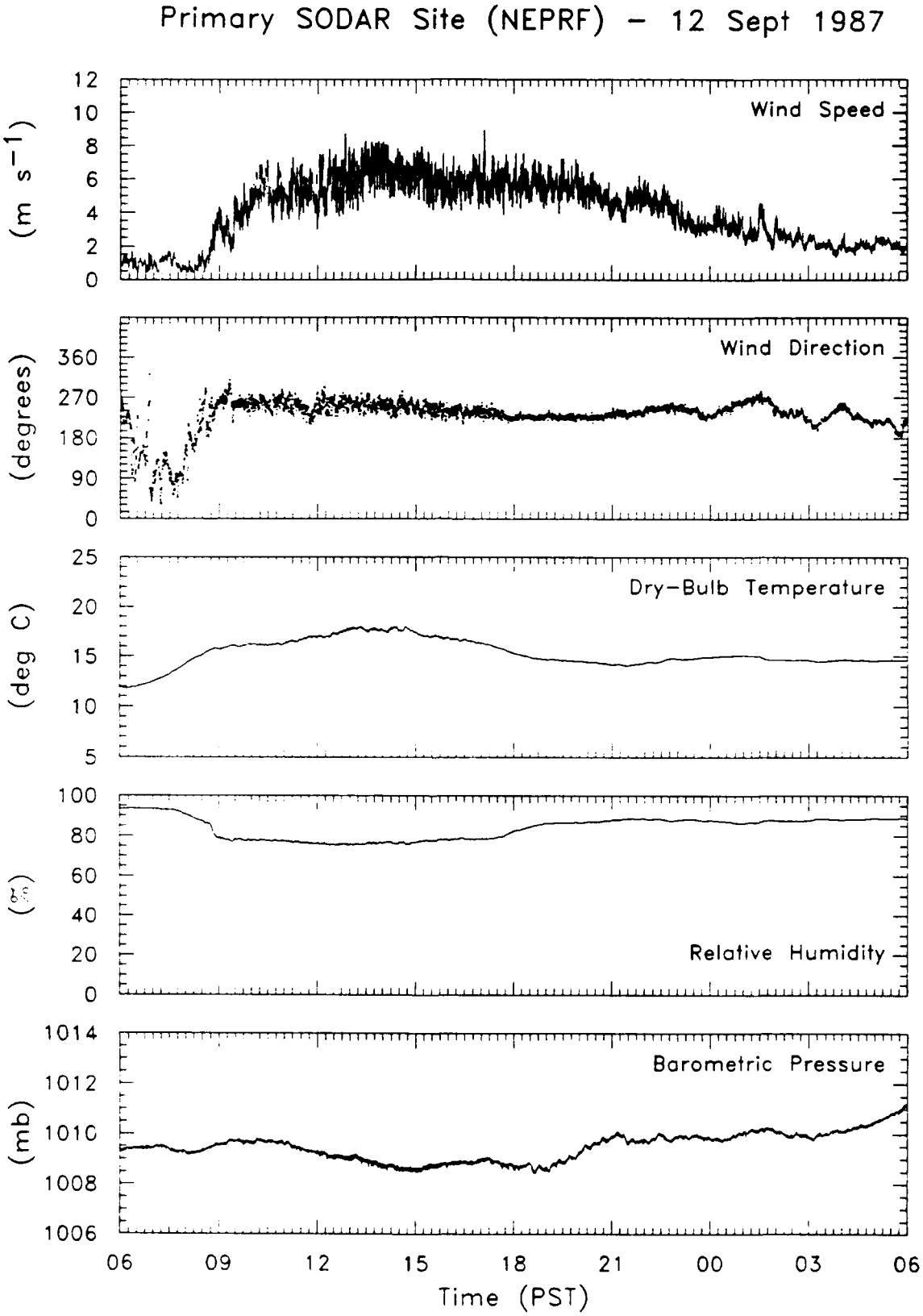

Primary SODAR Site (NPS) - 29 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1018
1016
1014
1012
1010
06
09
12
15
18
21
00
03
06
Time (PST)

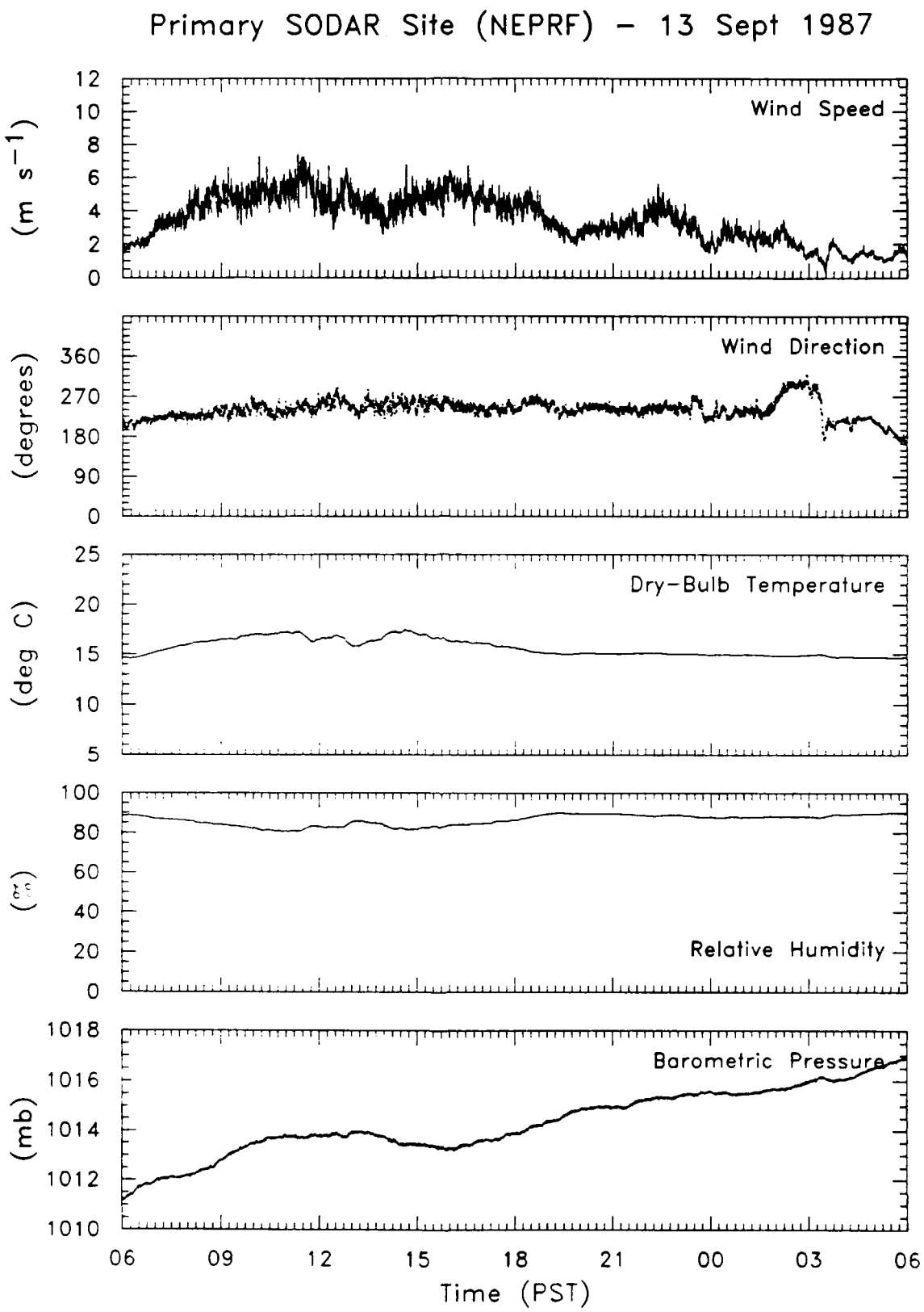

Primary SODAR Site (NPS) - 30 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1018
1016
1014
1012
1010
06
09
12
15
18
21
00
03
06
Time (PST)

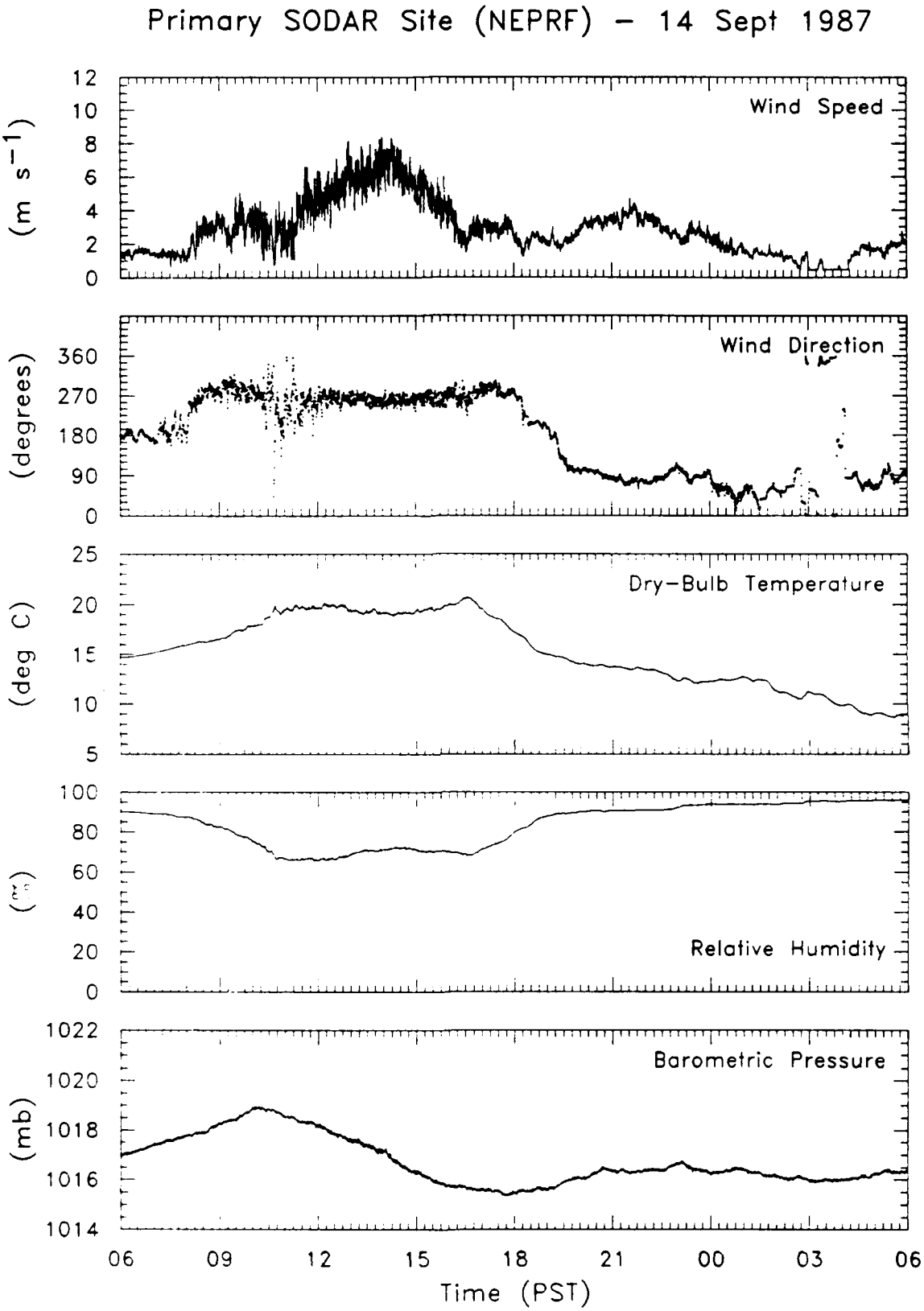
5. TIME SERIES, PRIMARY SODAR SITE--NEPRF

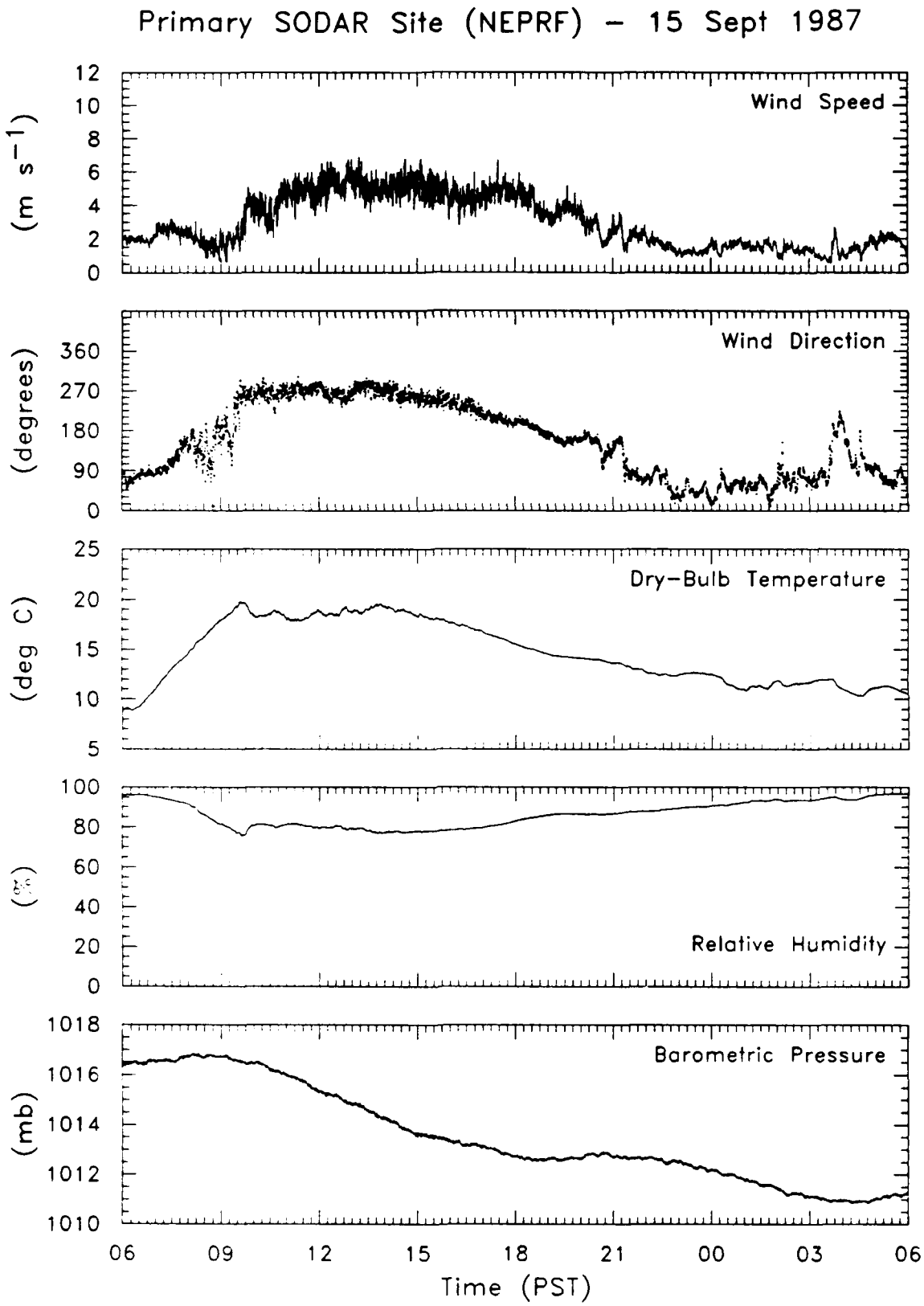
This section presents graphs of data collected by the Berkeley Solar Group under contract to NEPRF at the northern vertex of the sodar triangle (Fig. 1).

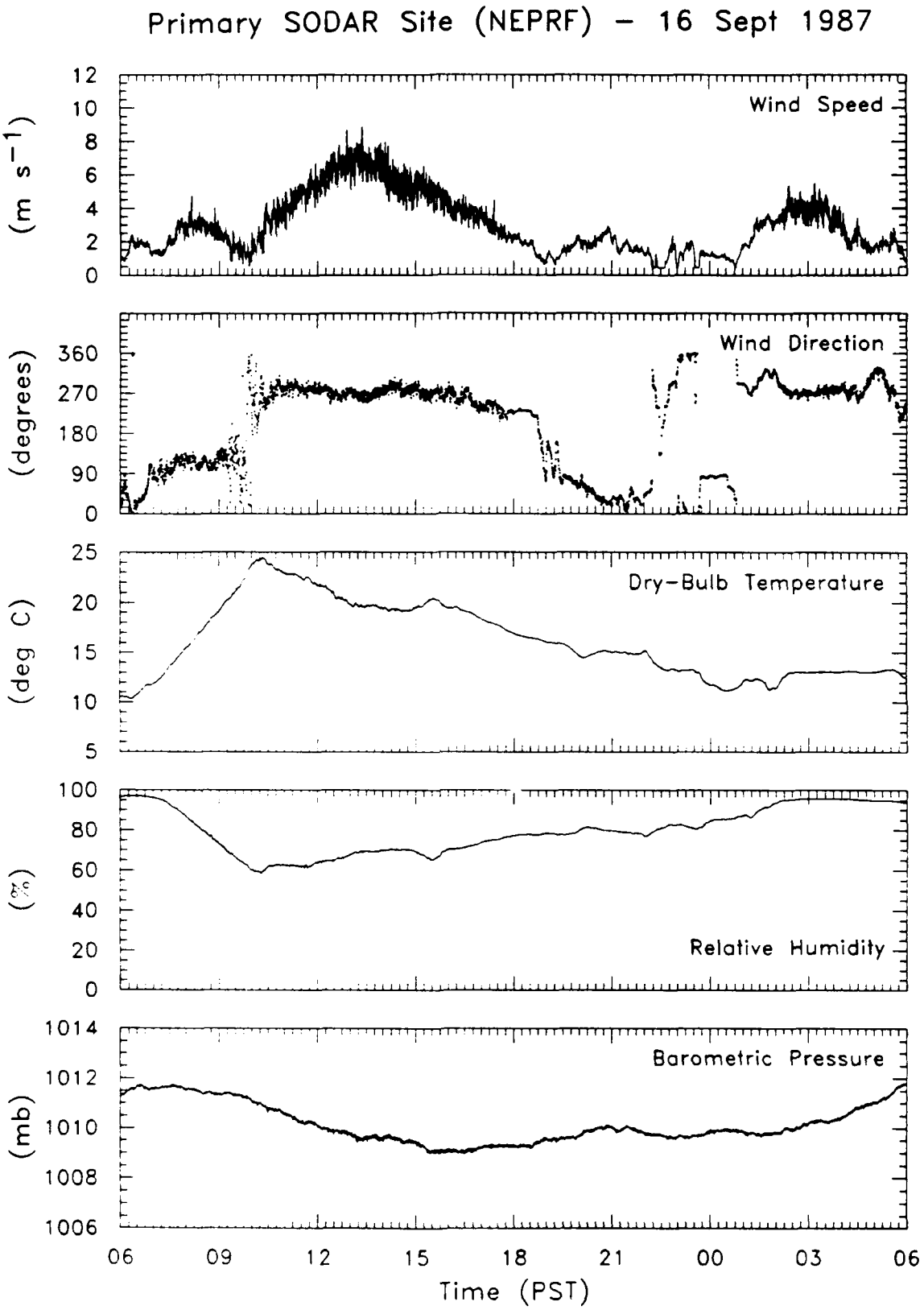

Primary SODAR Site (NEPRF) - 11 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1014
1012
1010
1008
1006
06
09
12
15
18
21
00
03
06
Time (PST)

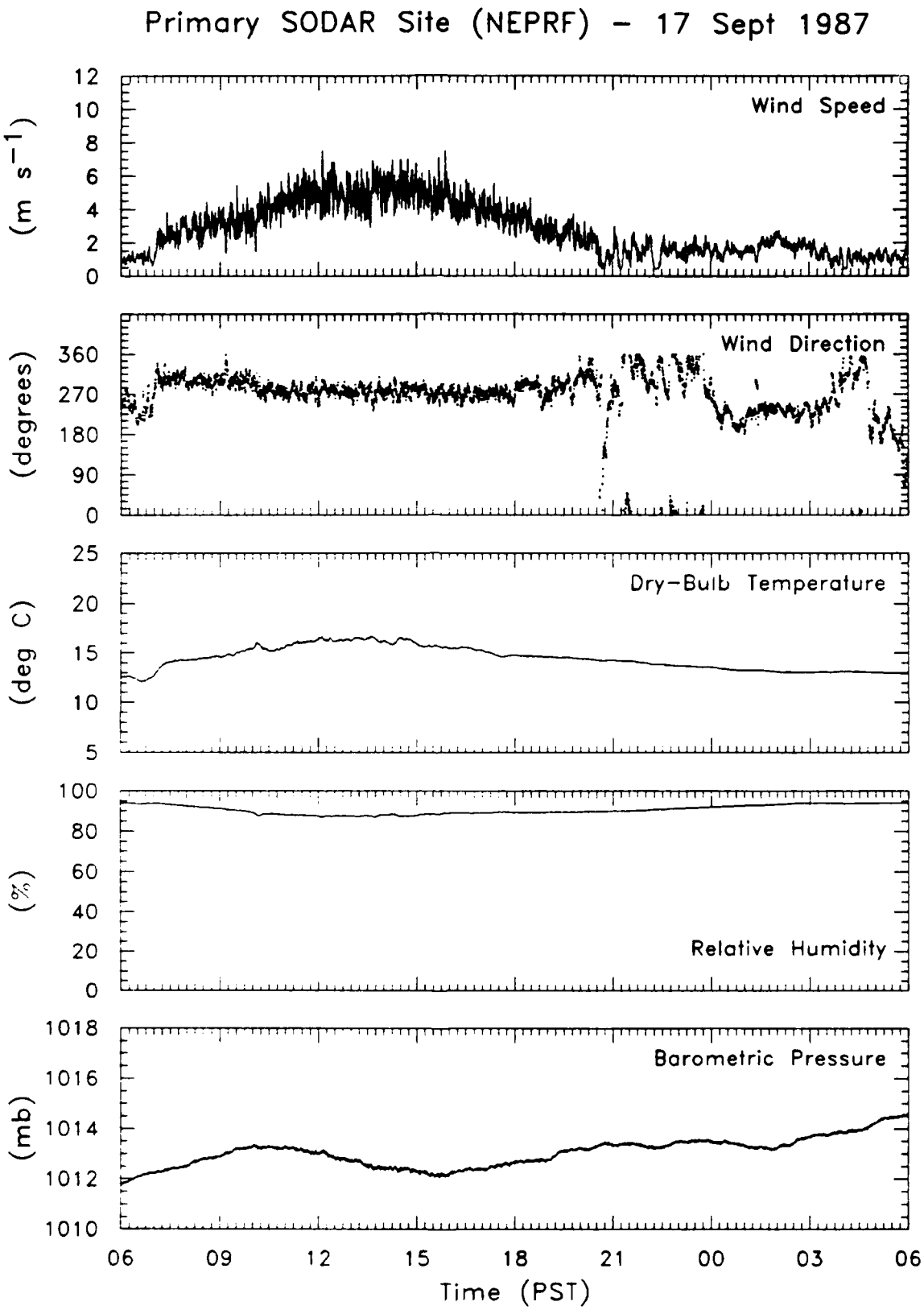

Primary SODAR Site (NEPRF) - 12 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1014
1012
1010
1008
1006
06
09
12
15
18
21
00
03
06
Time (PST)

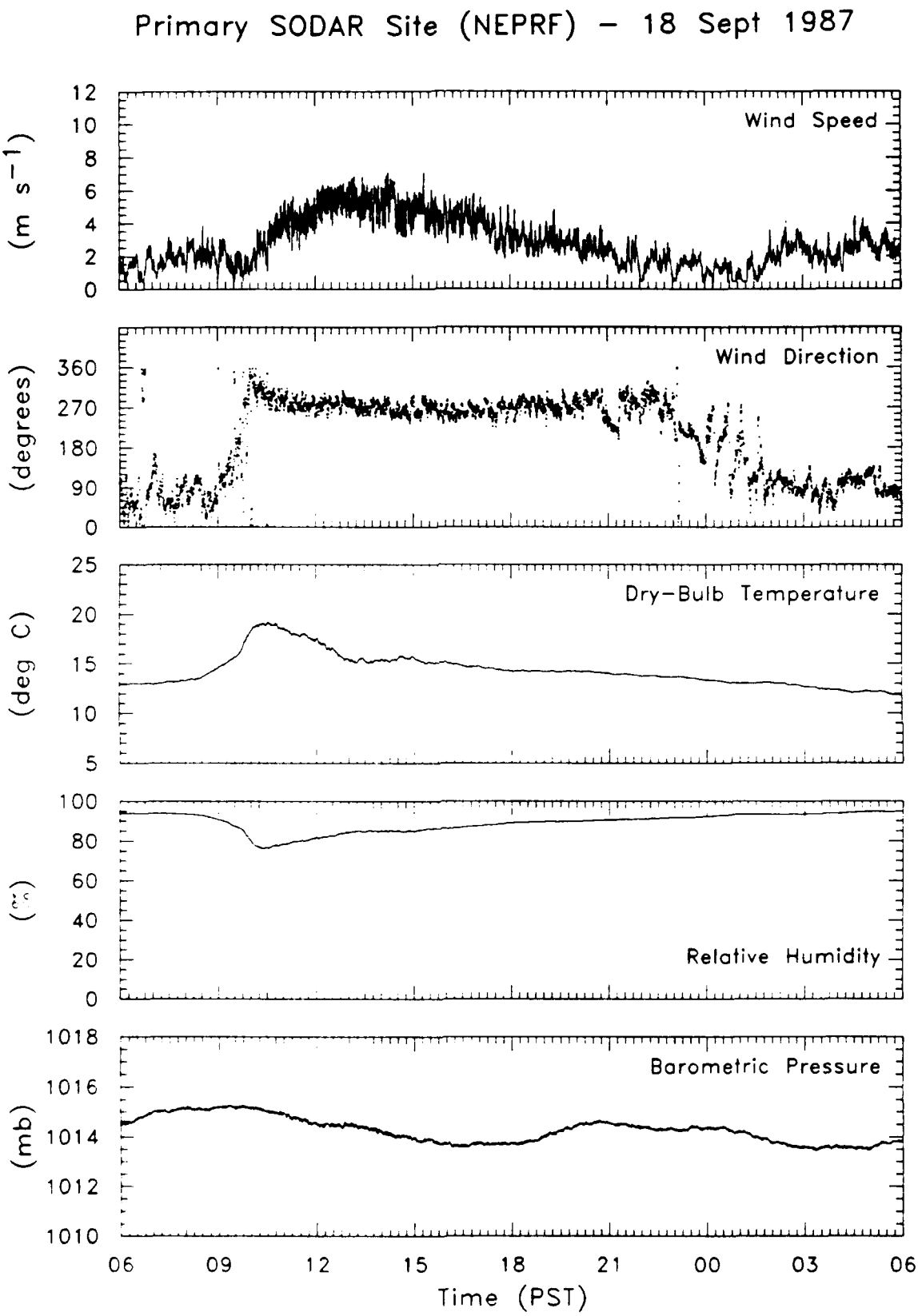

Primary SODAR Site (NEPRF) - 13 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1018
1016
1014
1012
1010
06
09
12
15
18
21
00
03
06
Time (PST)

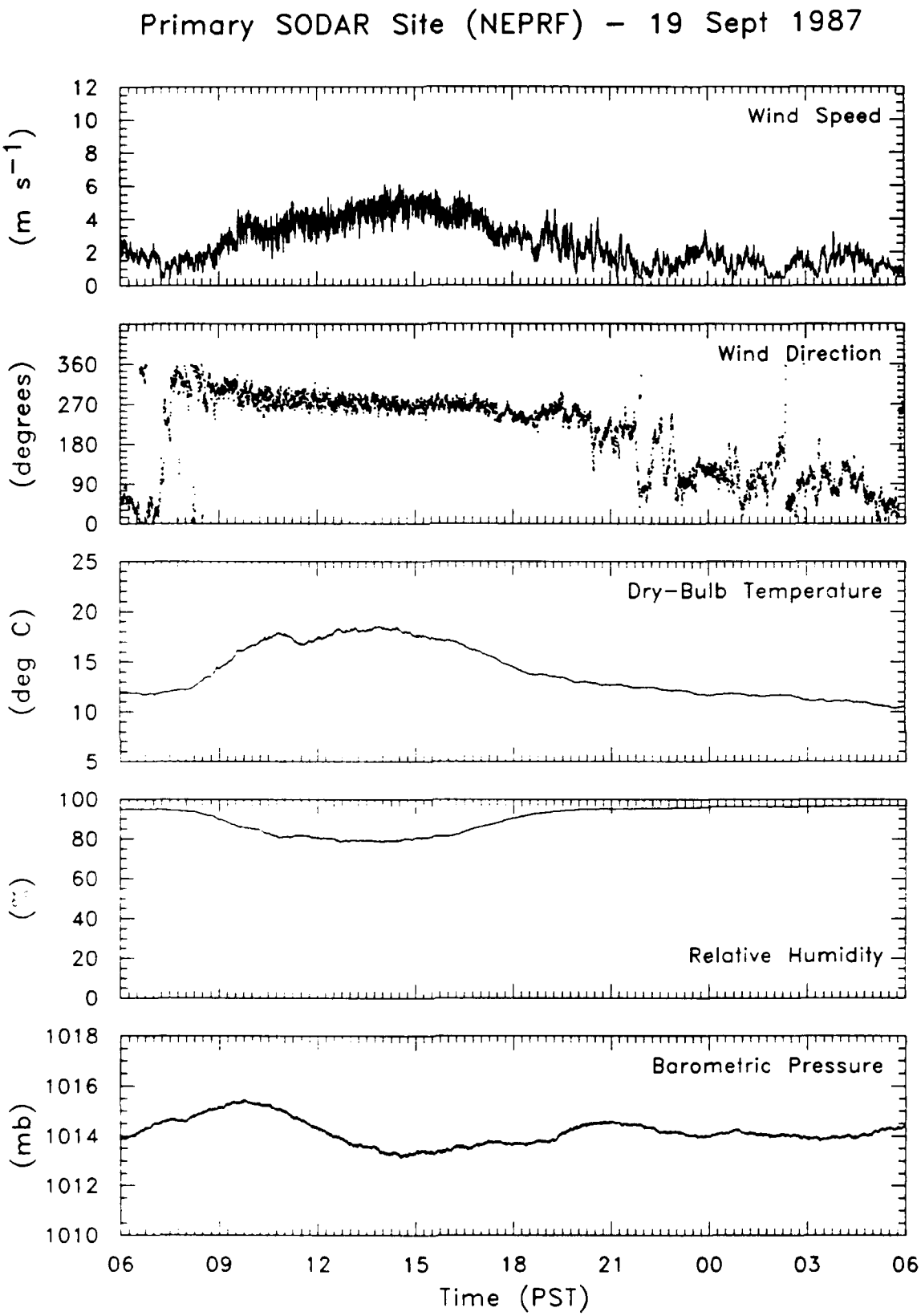

Primary SODAR Site (NEPRF) - 14 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1022
1020
1018
1016
1014
06
09
12
15
18
21
00
03
06
Time (PST)

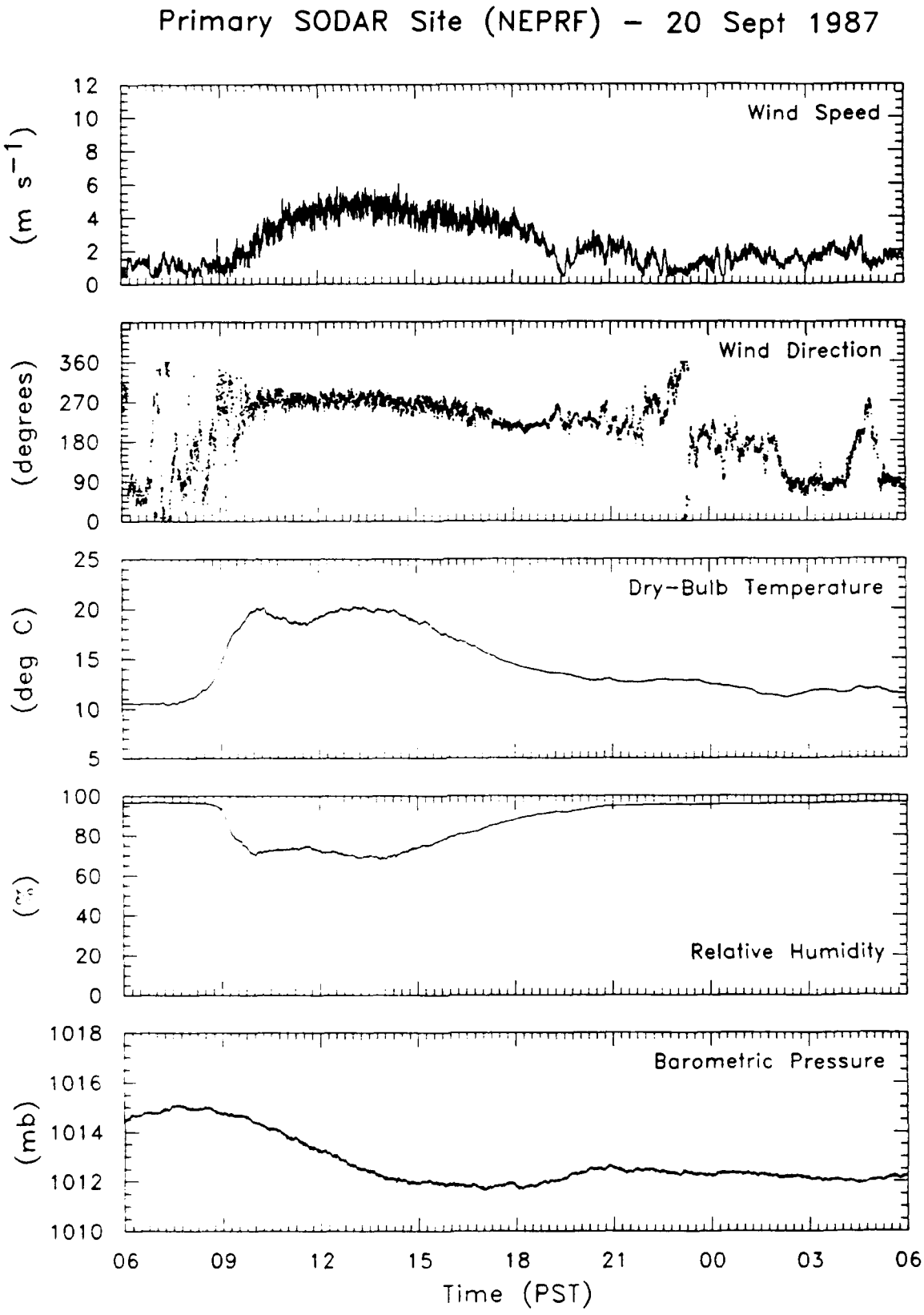

Primary SODAR Site (NEPRF) - 15 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1018
1016
1014
1012
1010
06
09
12
15
18
21
00
03
06
Time (PST)

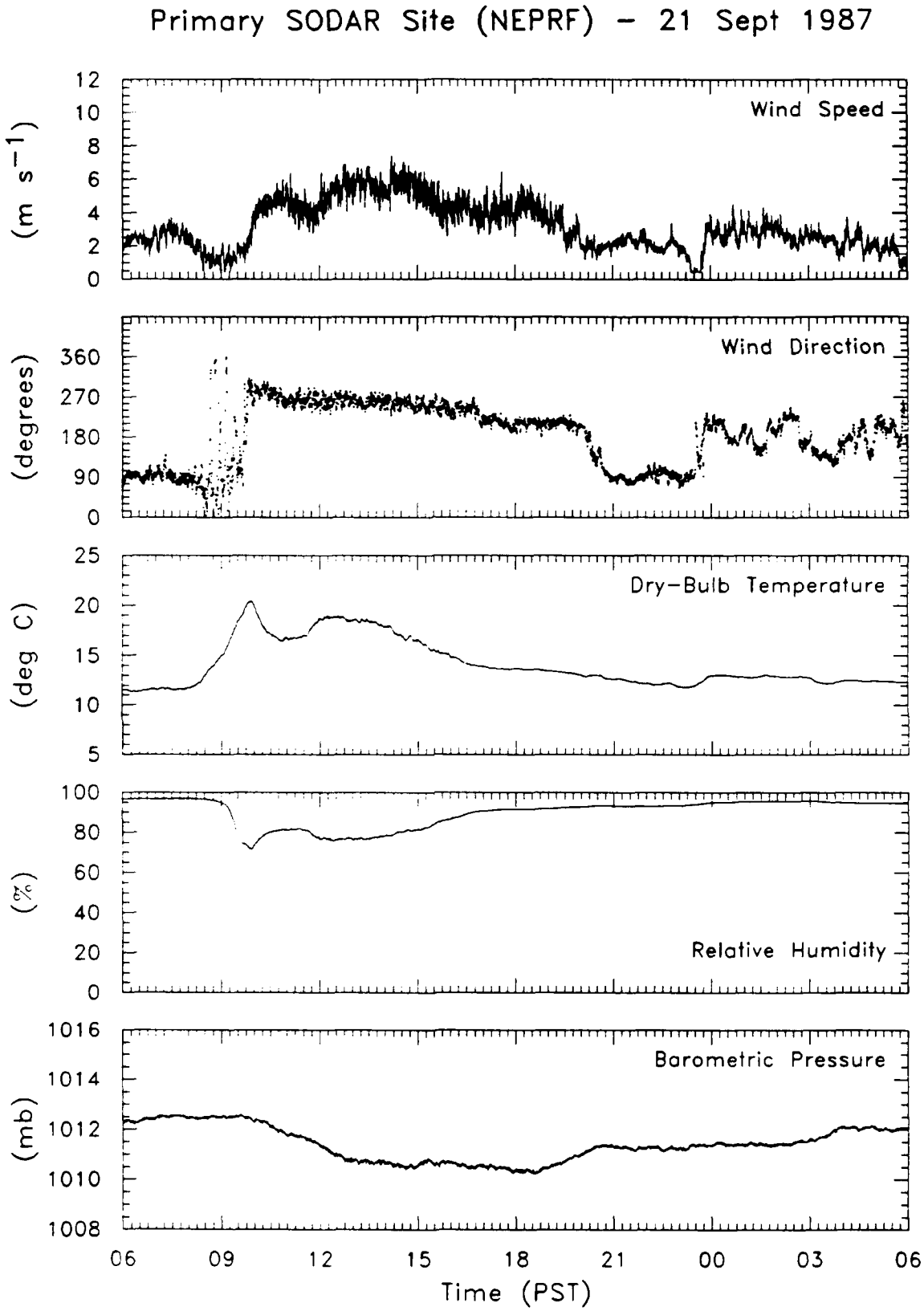

Primary SODAR Site (NEPRF) - 16 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1014
1012
1010
1008
1006
06
09
12
15
18
21
00
03
06
Time (PST)

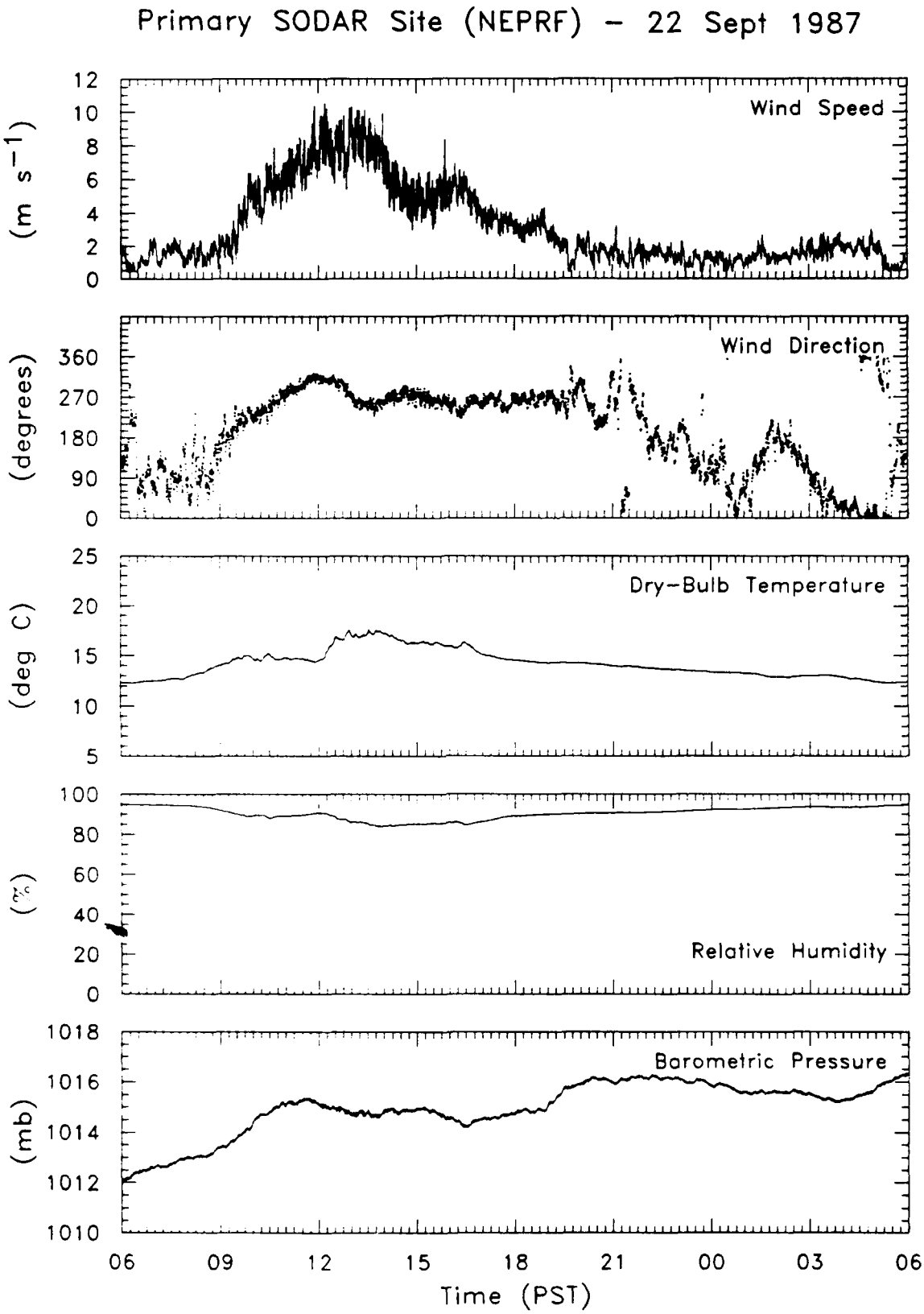

Primary SODAR Site (NEPRF) - 17 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1018
1016
1014
1012
1010
06
09
12
15
18
21
00
03
06
Time (PST)

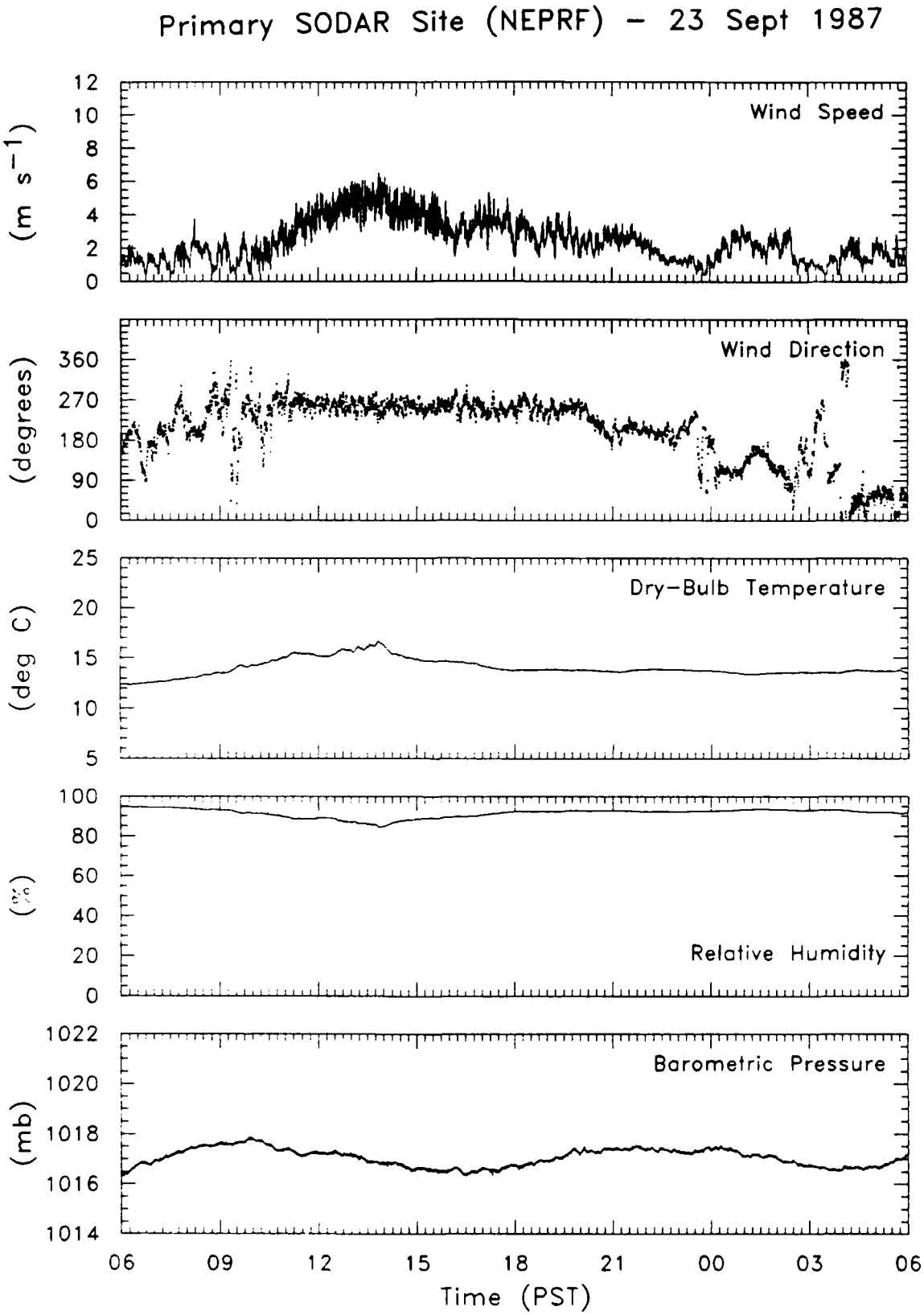

Primary SODAR Site (NEPRF) – 18 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1018
1016
1014
1012
1010
06
09
12
15
18
21
00
03
06
Time (PST)

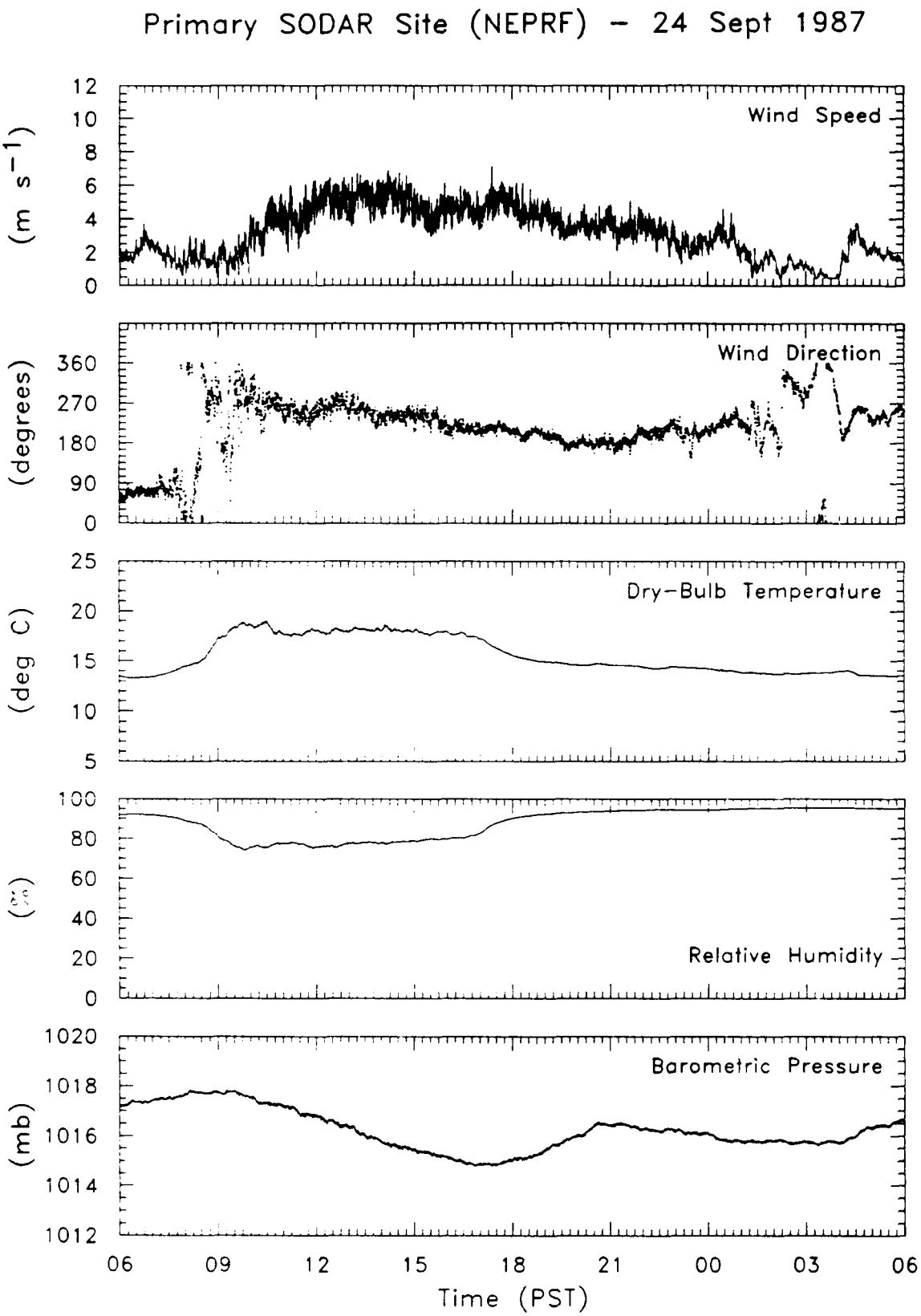

Primary SODAR Site (NEPRF) - 19 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
100
80
60
40
20
0
Barometric Pressure
(mb)
1018
1016
1014
1012
1010
06
09
12
15
18
21
00
03
06
Time (PST)

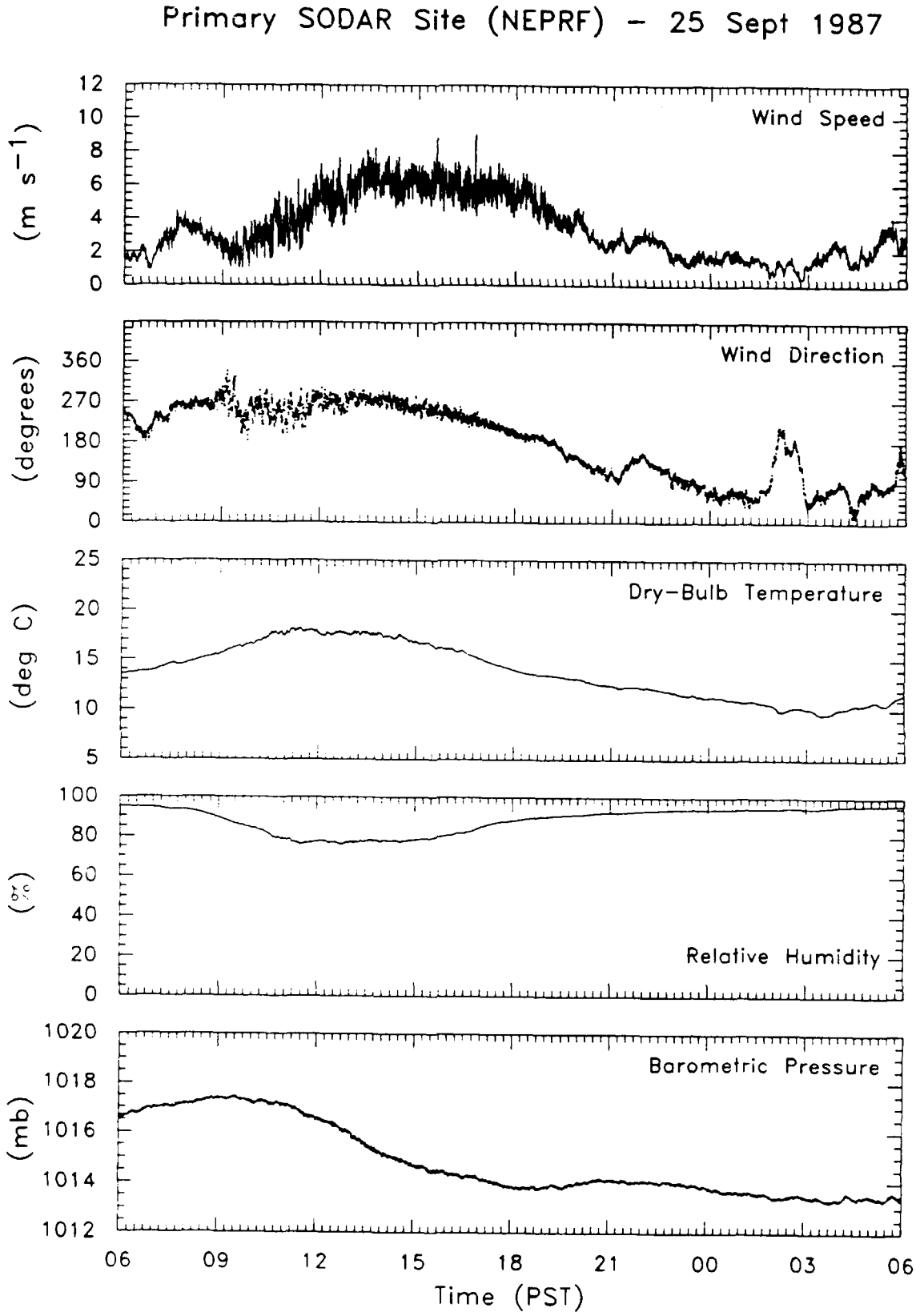

Primary SODAR Site (NEPRF) - 20 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1018
1016
1014
1012
1010
06
09
12
15
18
21
00
03
06
Time (PST)

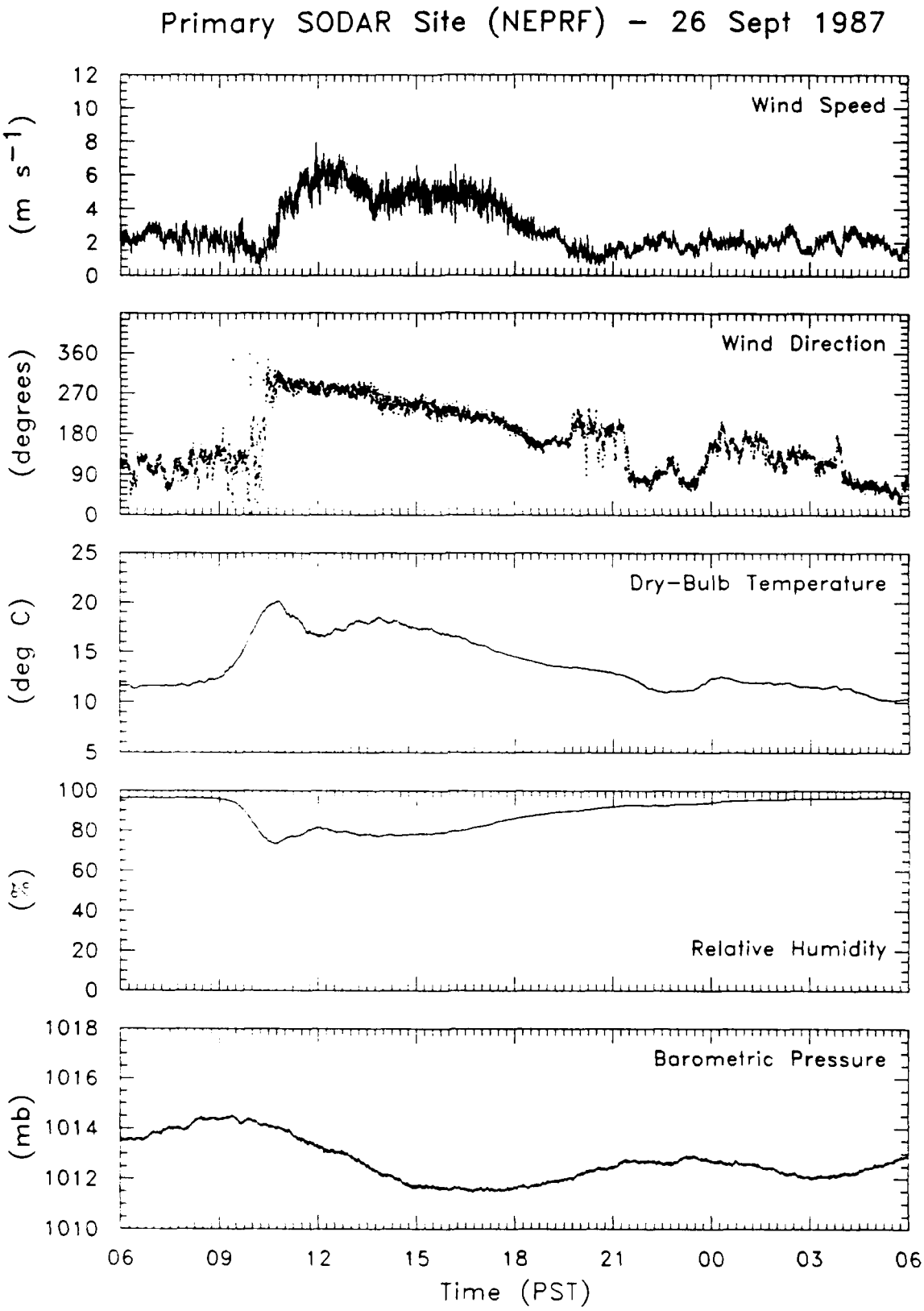

Primary SODAR Site (NEPRF) - 21 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1016
1014
1012
1010
1008
06
09
12
15
18
21
00
03
06
Time (PST)

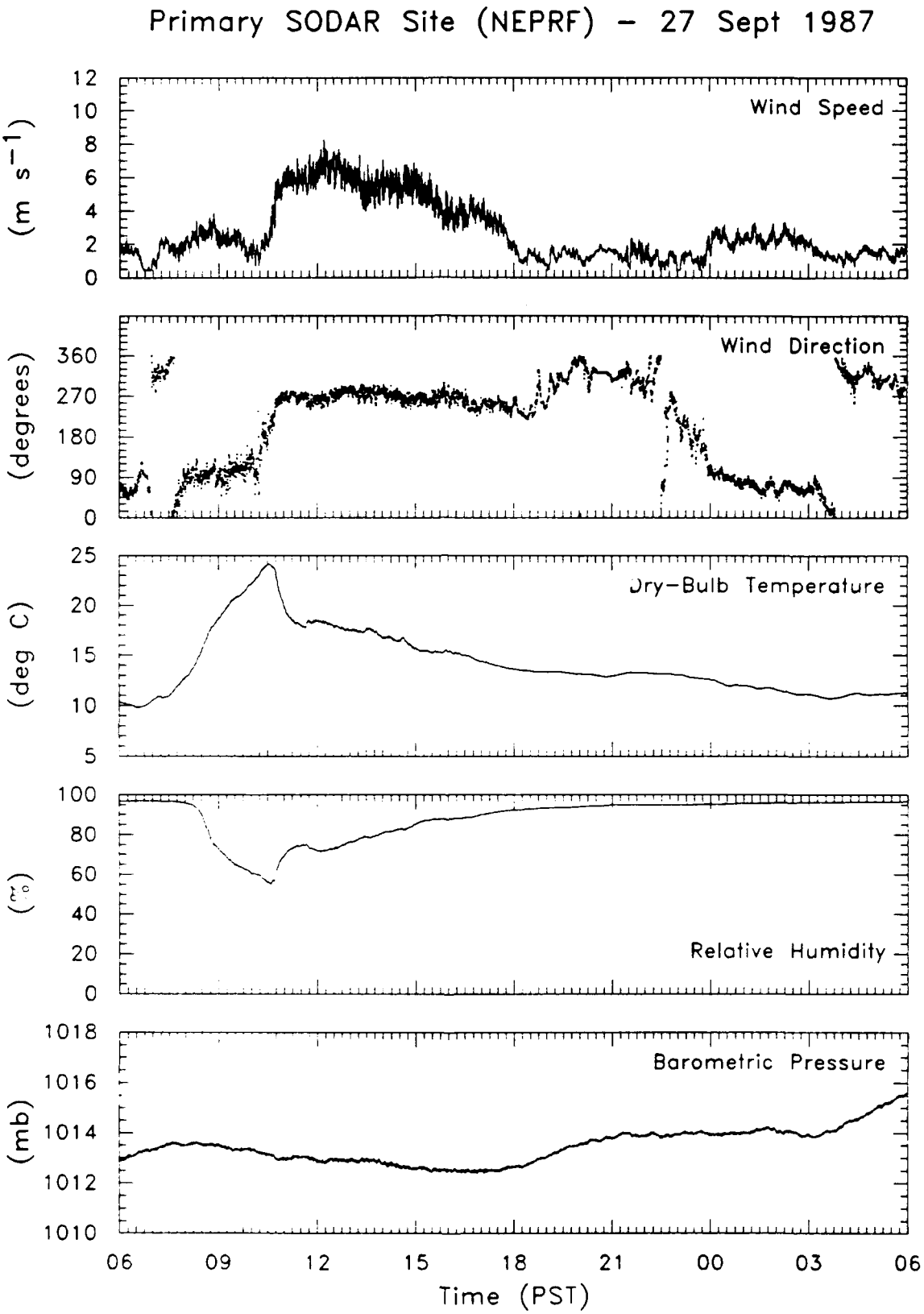

Primary SODAR Site (NEPRF) - 22 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1018
1016
1014
1012
1010
06
09
12
15
18
21
00
03
06
Time (PST)

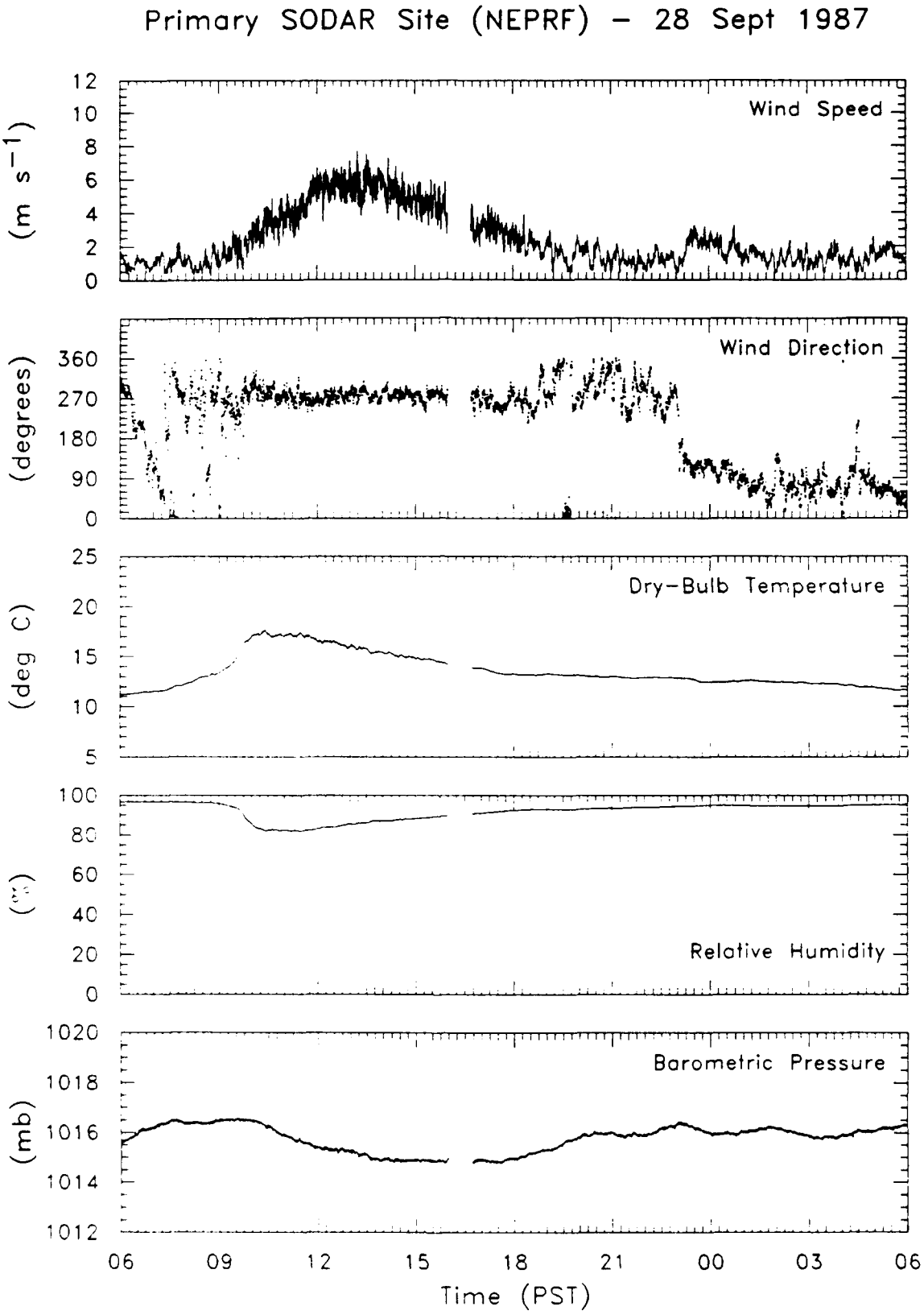

Primary SODAR Site (NEPRF) - 23 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1022
1020
1018
1016
1014
06
09
12
15
18
21
00
03
06
Time (PST)

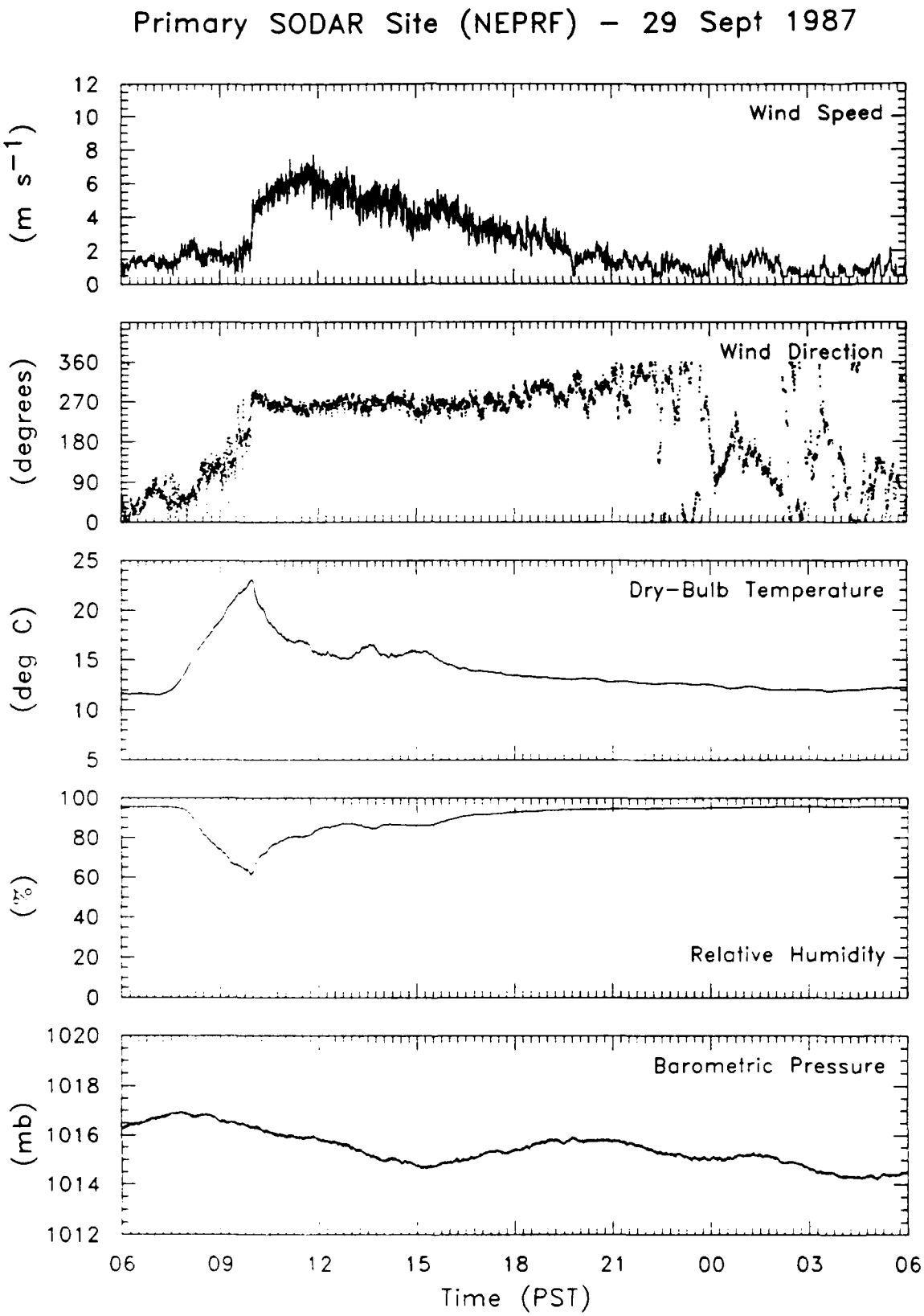

Primary SODAR Site (NEPRF) - 24 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1020
1018
1016
1014
1012
06
09
12
15
18
21
00
03
06
Time (PST)

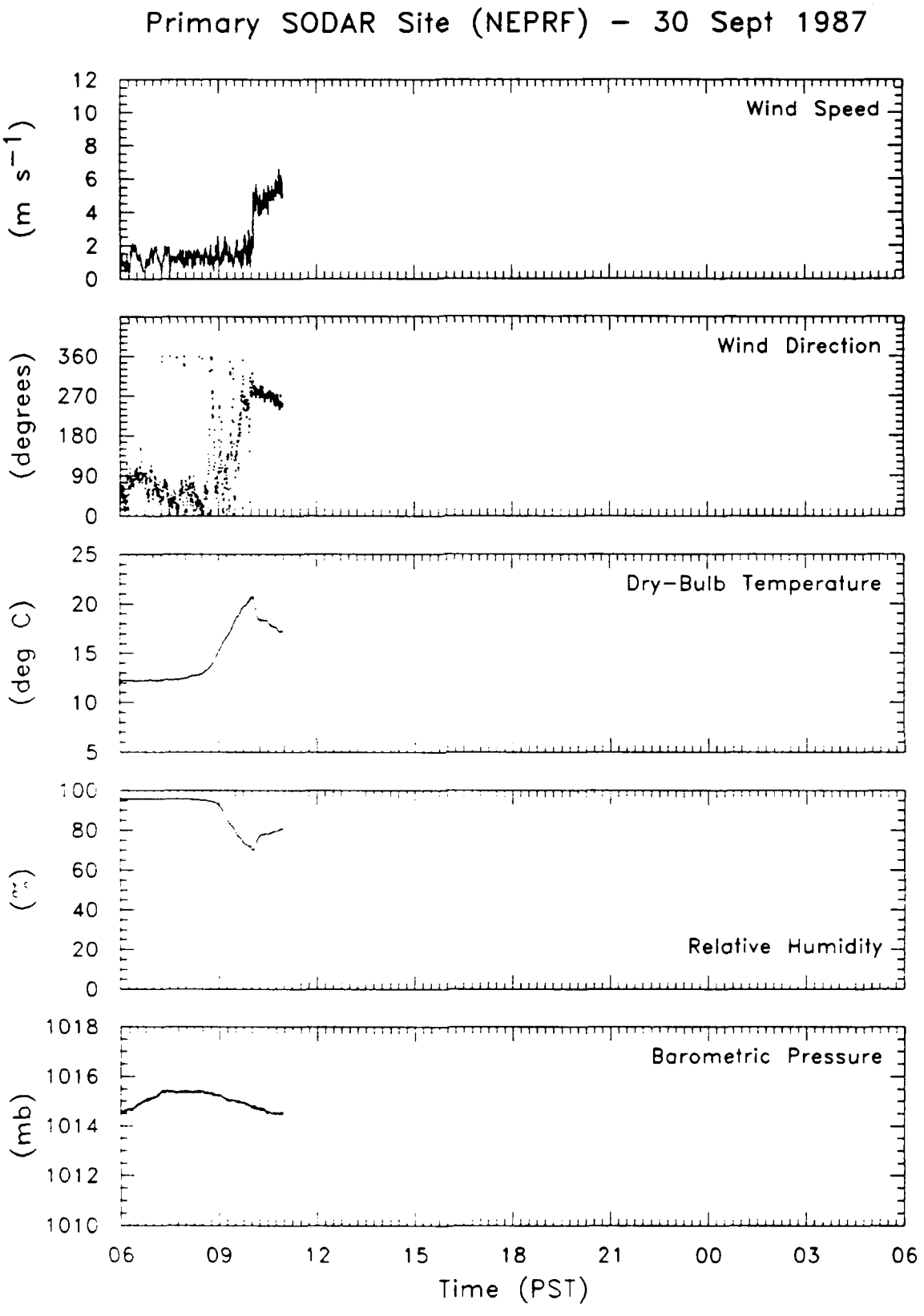

Primary SODAR Site (NEPRF) - 25 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1020
1018
1016
1014
1012
06
09
12
15
18
21
00
03
06
Time (PST)


Primary SODAR Site (NEPRF) - 26 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1018
1016
1014
1012
1010
06
09
12
15
18
21
00
03
06
Time (PST)


Primary SODAR Site (NEPRF) - 27 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1018
1016
1014
1012
1010
06
09
12
15
18
21
00
03
06
Time (PST)


Primary SODAR Site (NEPRF) - 28 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1020
1018
1016
1014
1012
06
09
12
15
18
21
00
03
06
Time (PST)

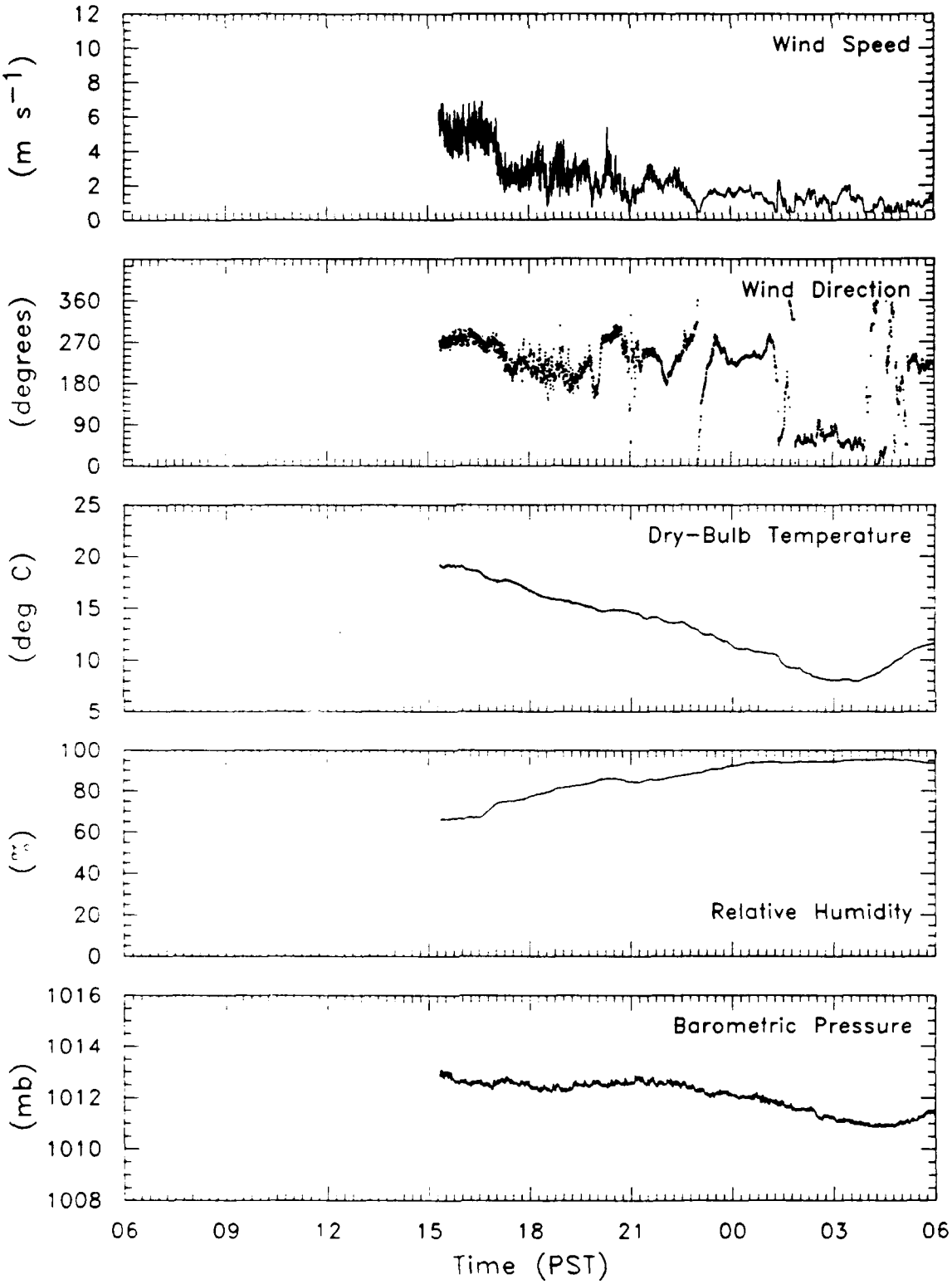

Primary SODAR Site (NEPRF) - 29 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1020
1018
1016
1014
1012
06
09
12
15
18
21
00
03
06
Time (PST)


Primary SODAR Site (NEPRF) - 30 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1018
1016
1014
1012
1010
06
09
12
15
18
21
00
03
06
Time (PST)

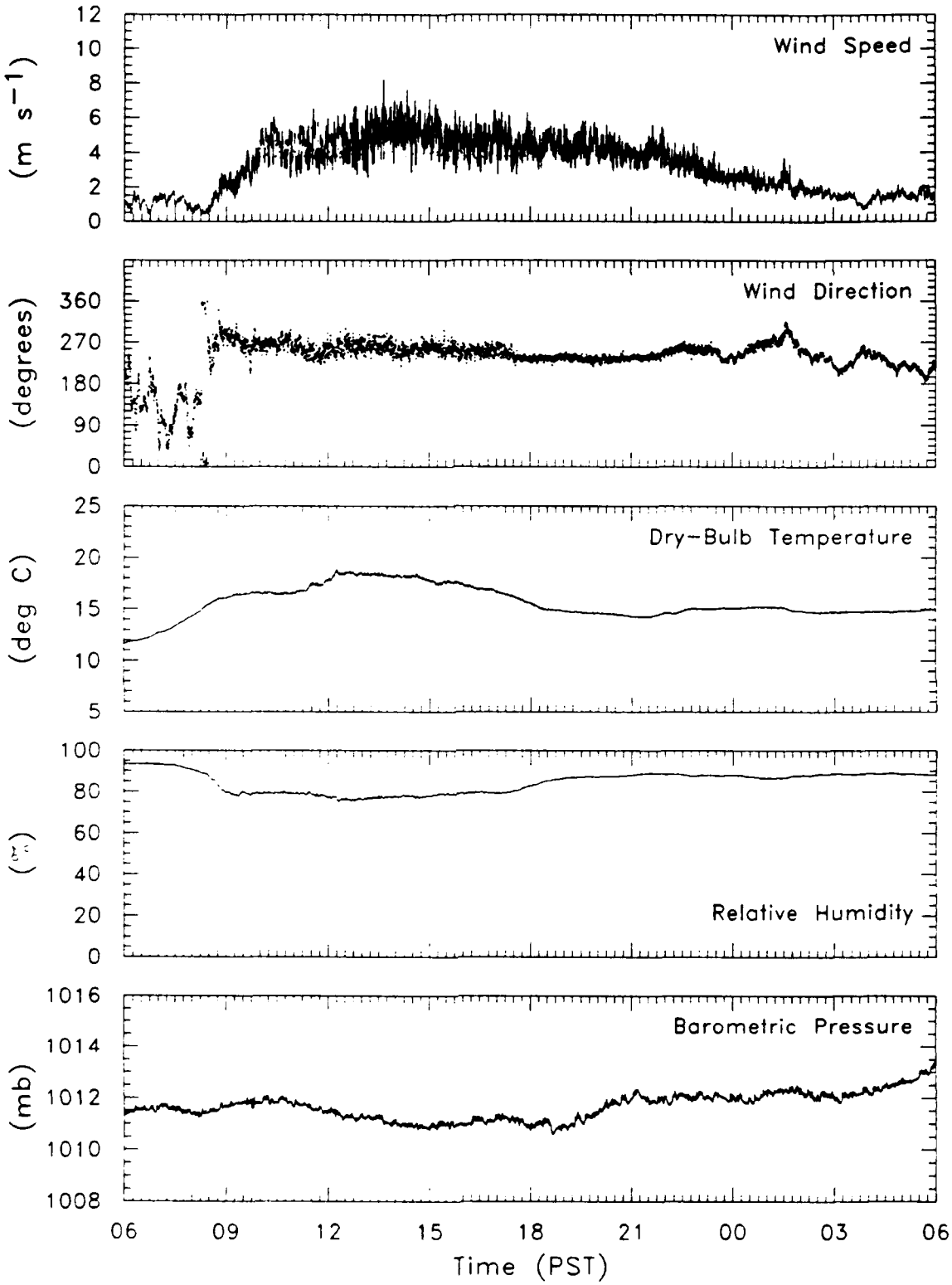
6. TIME SERIES, EASTERN VERTEX OF THE SODAR TRIANGLE--NEPRF

This section presents graphs of data collected by the Berkeley Solar Group under contract to NEPRF at the eastern vertex of the sodar triangle (Fig. 1).

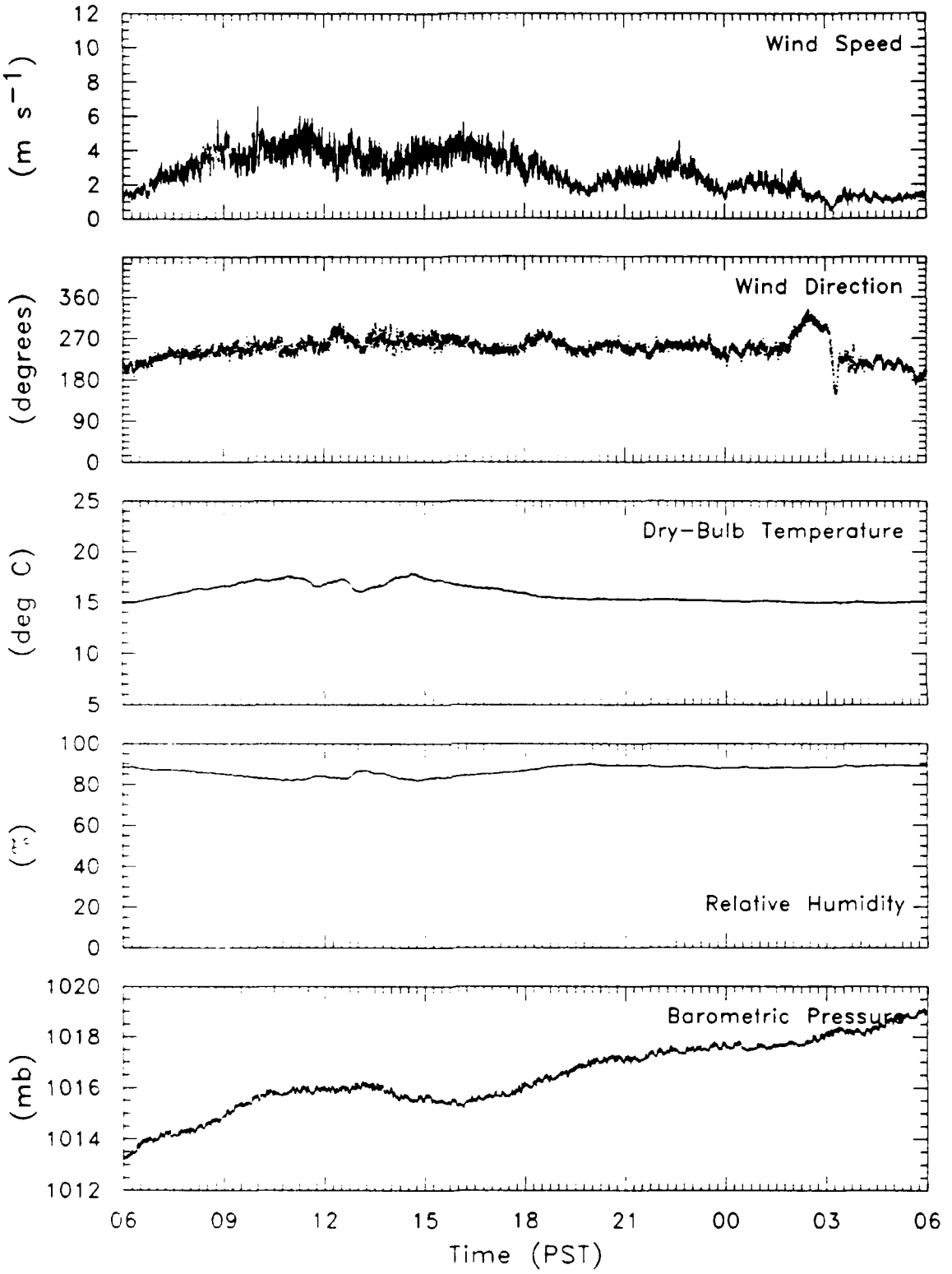
SODAR Triangle, Eastern Vertex (NEPRF) – 11 Sept 1987



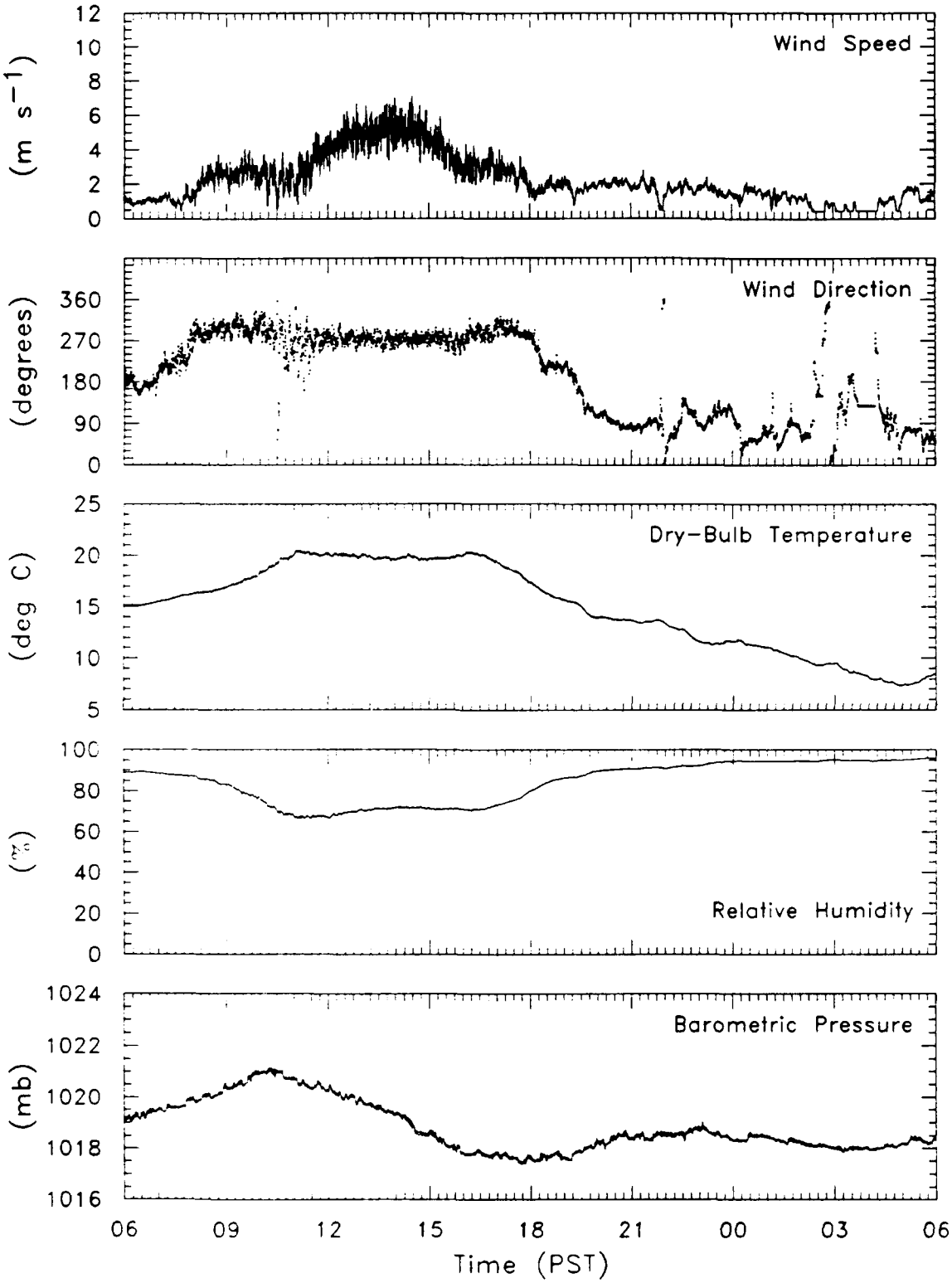
SODAR Triangle, Eastern Vertex (NEPRF) - 12 Sept 1987



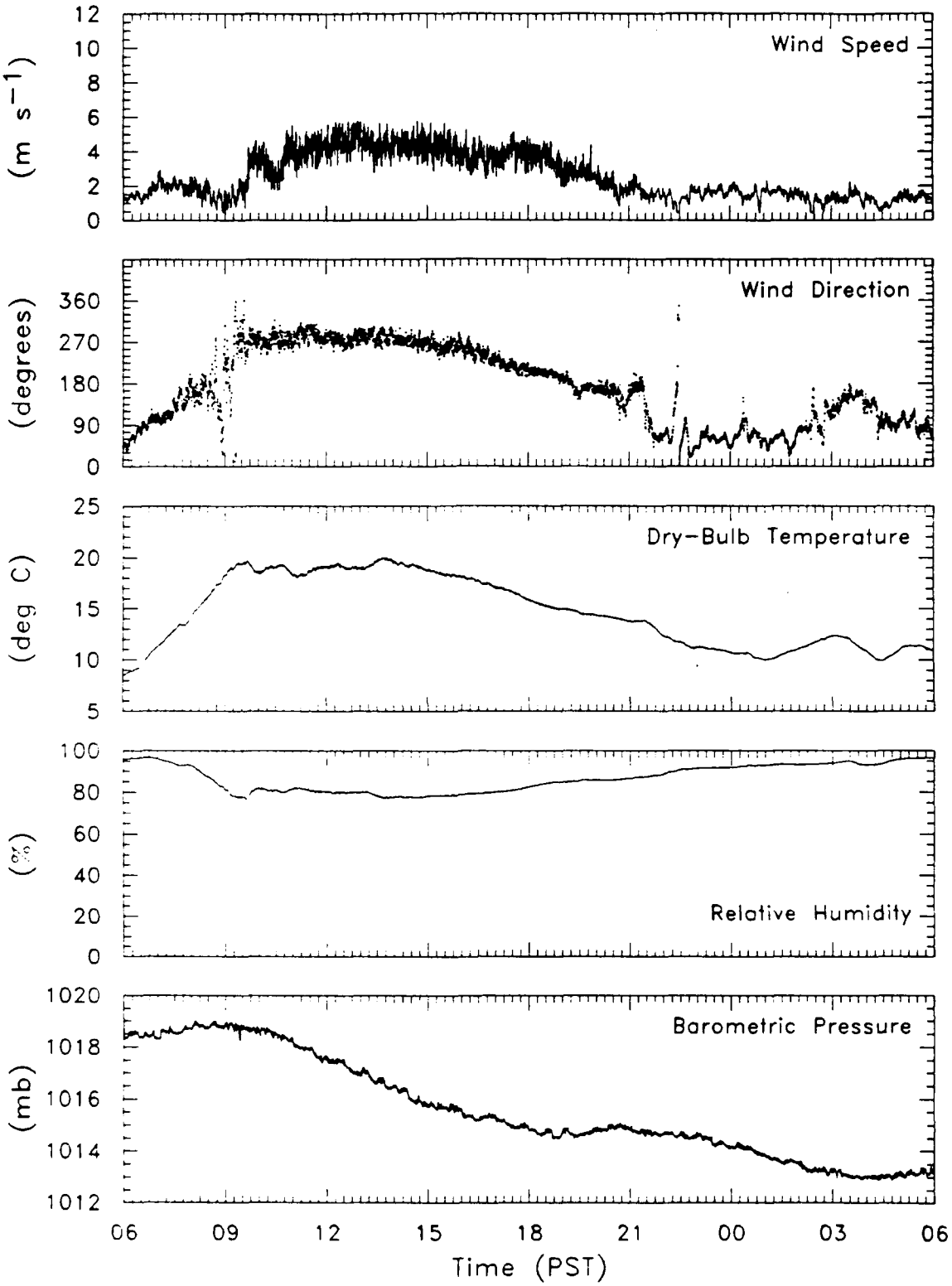
SODAR Triangle, Eastern Vertex (NEPRF) – 13 Sept 1987



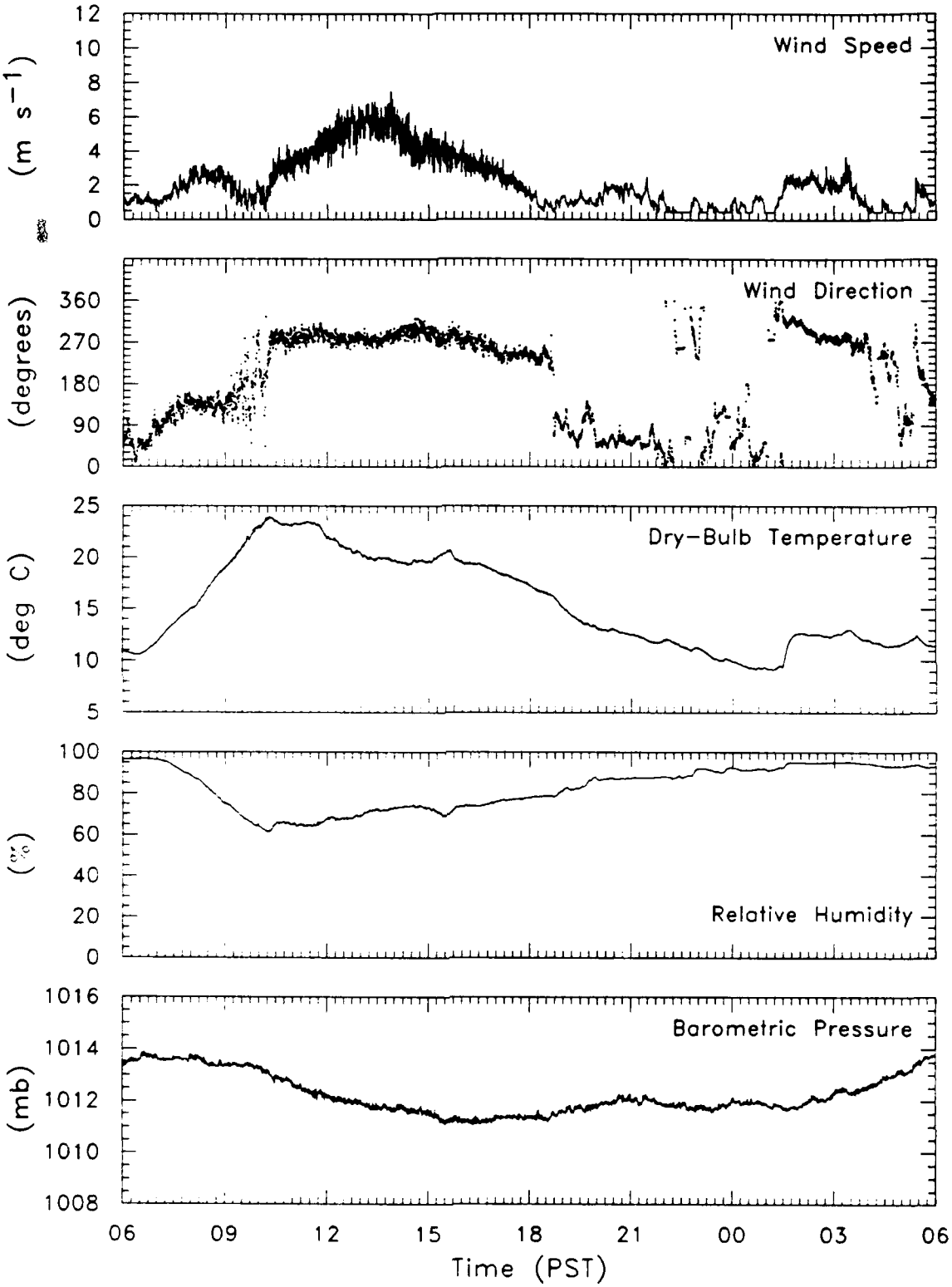
SODAR Triangle, Eastern Vertex (NEPRF) – 14 Sept 1987



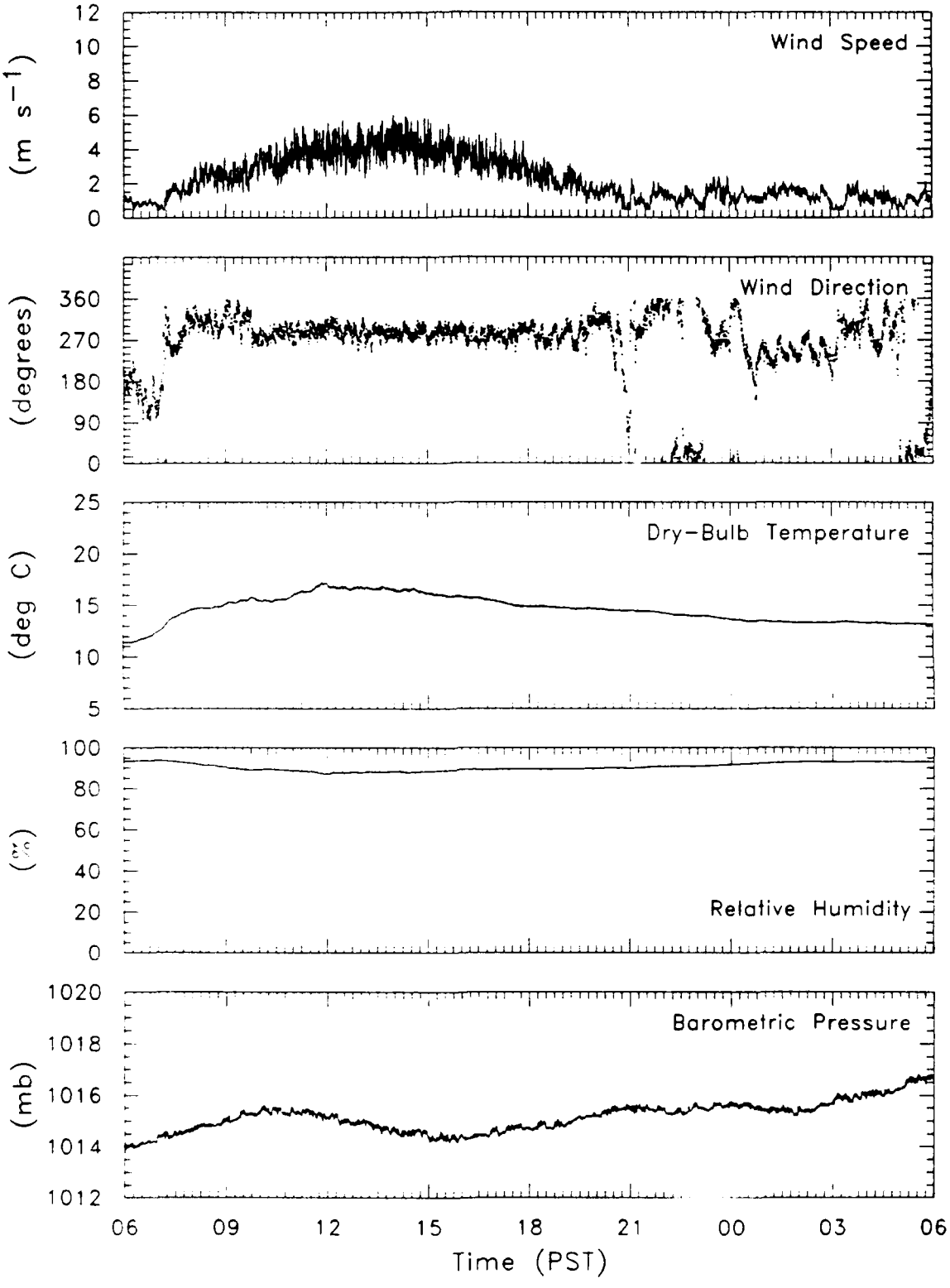
SODAR Triangle, Eastern Vertex (NEPRF) – 15 Sept 1987



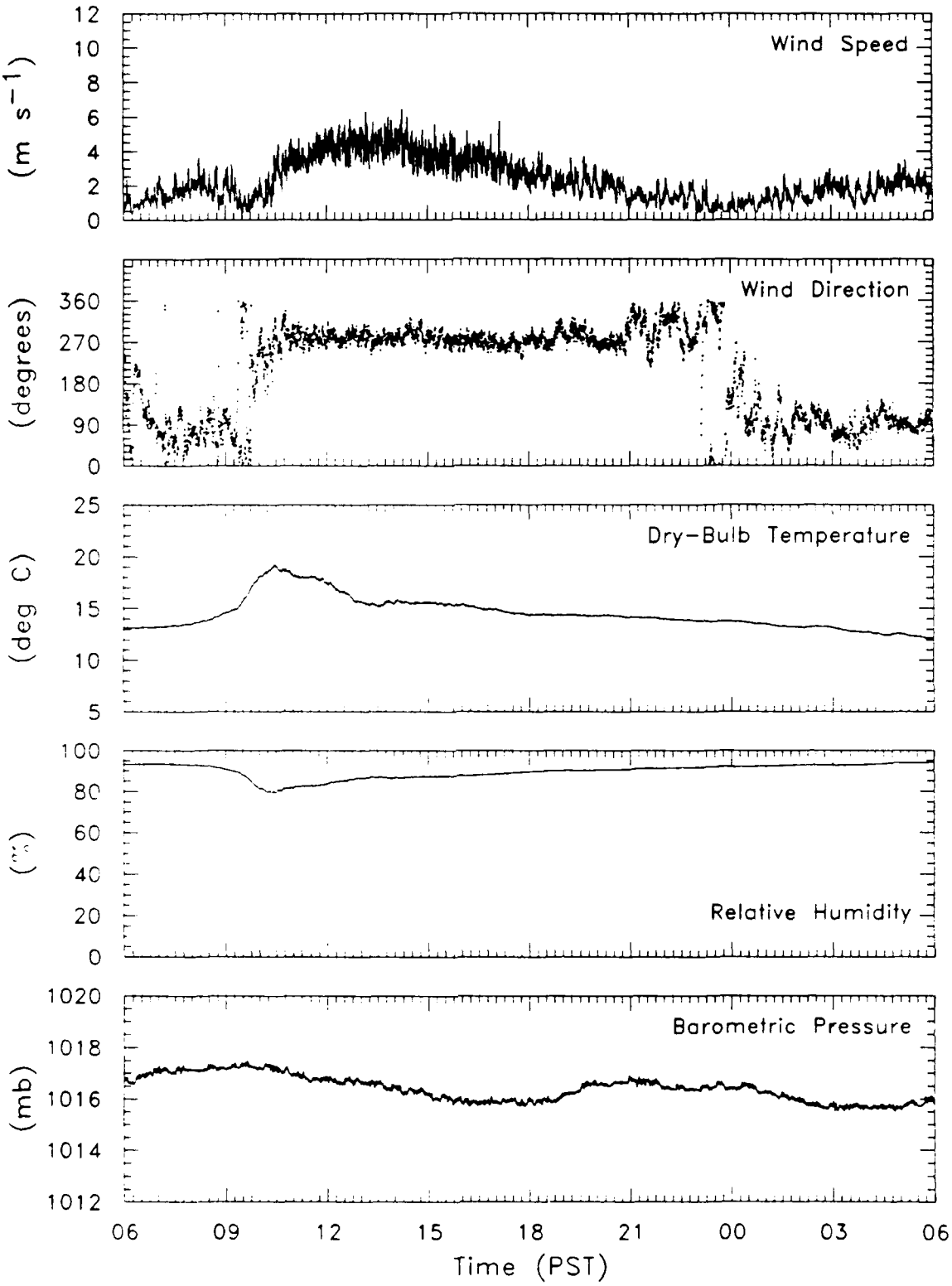
SODAR Triangle, Eastern Vertex (NEPRF) – 16 Sept 1987



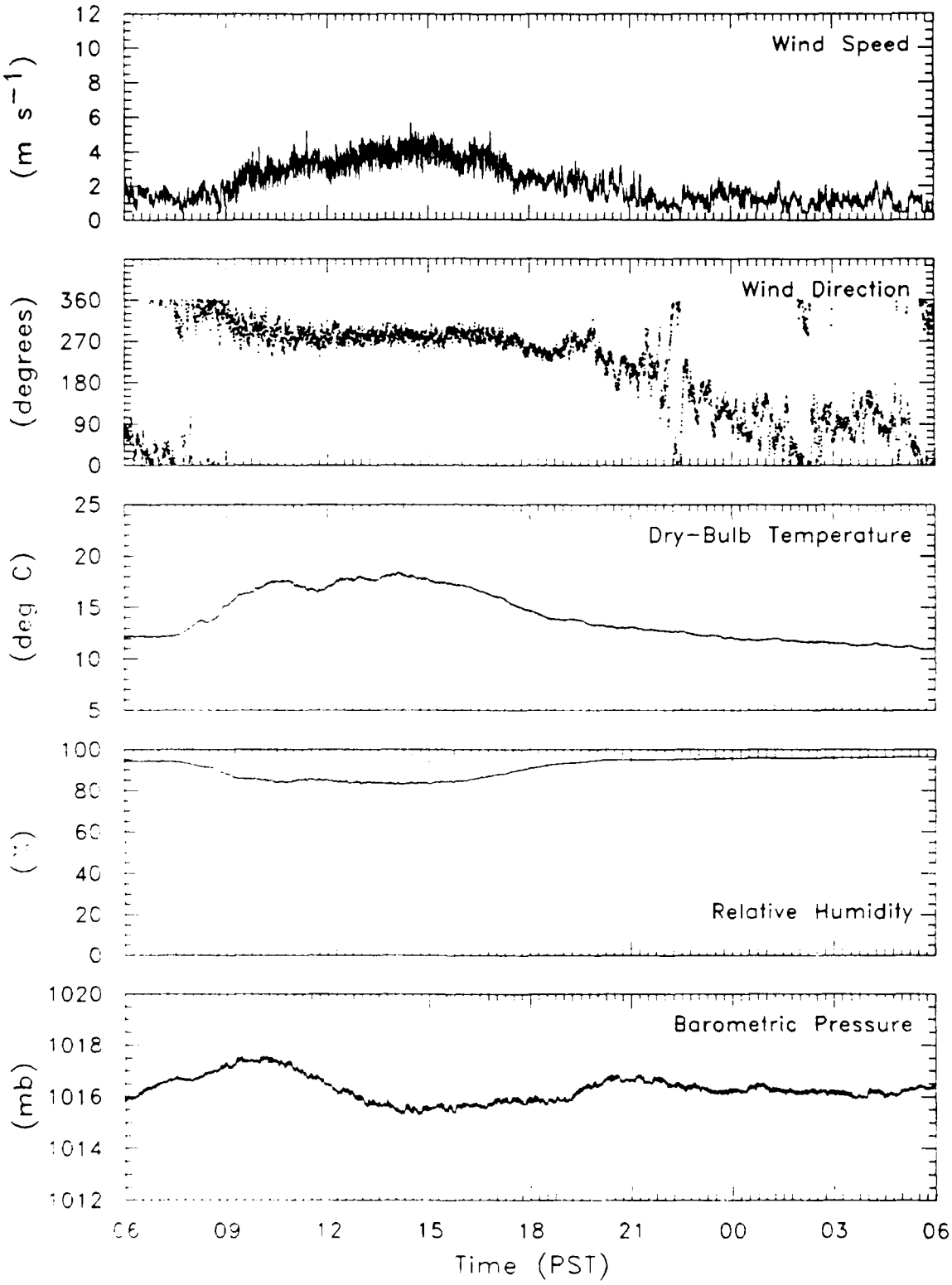
SODAR Triangle, Eastern Vertex (NEPRF) - 17 Sept 1987



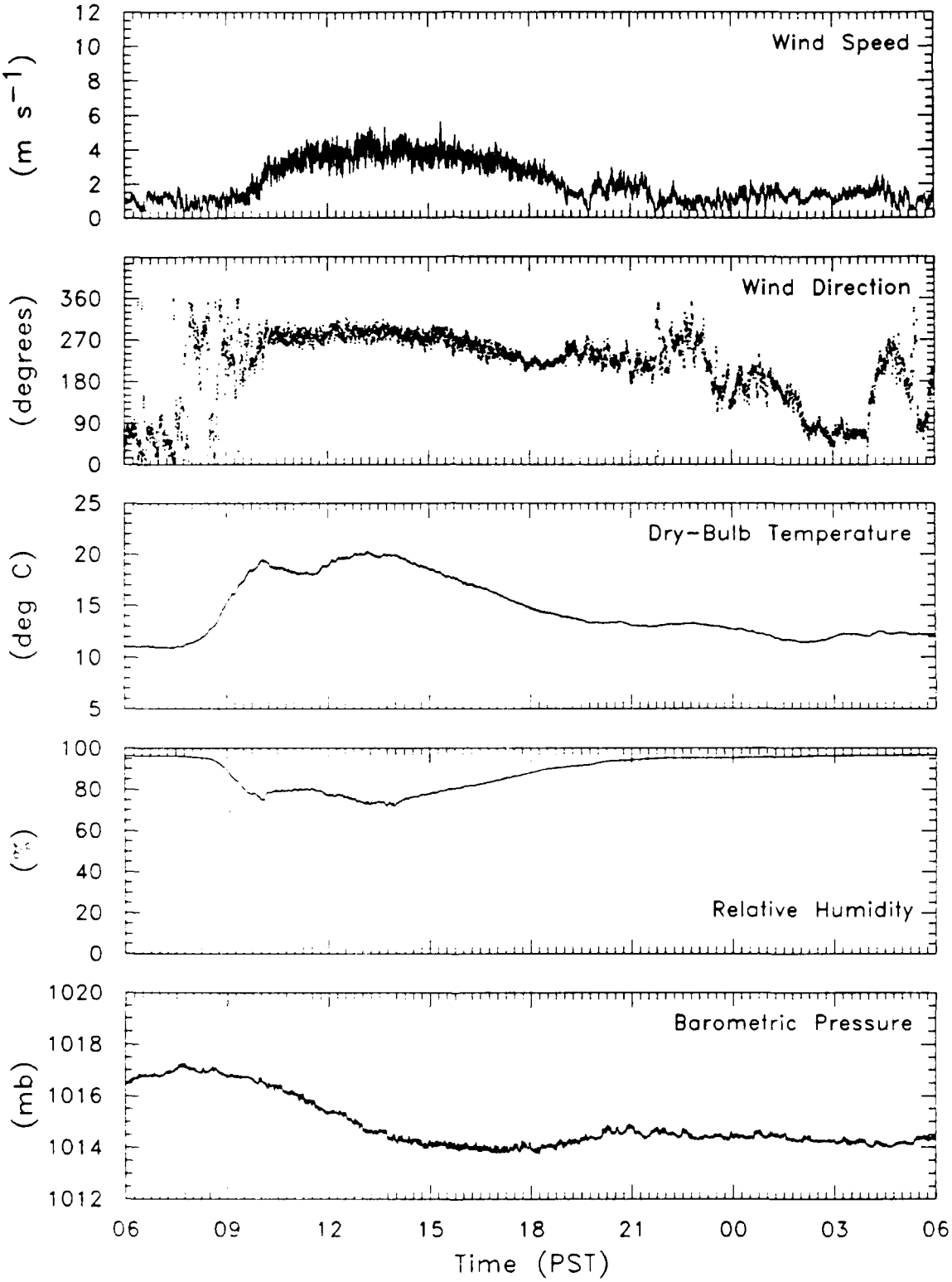
SODAR Triangle, Eastern Vertex (NEPRF) – 18 Sept 1987



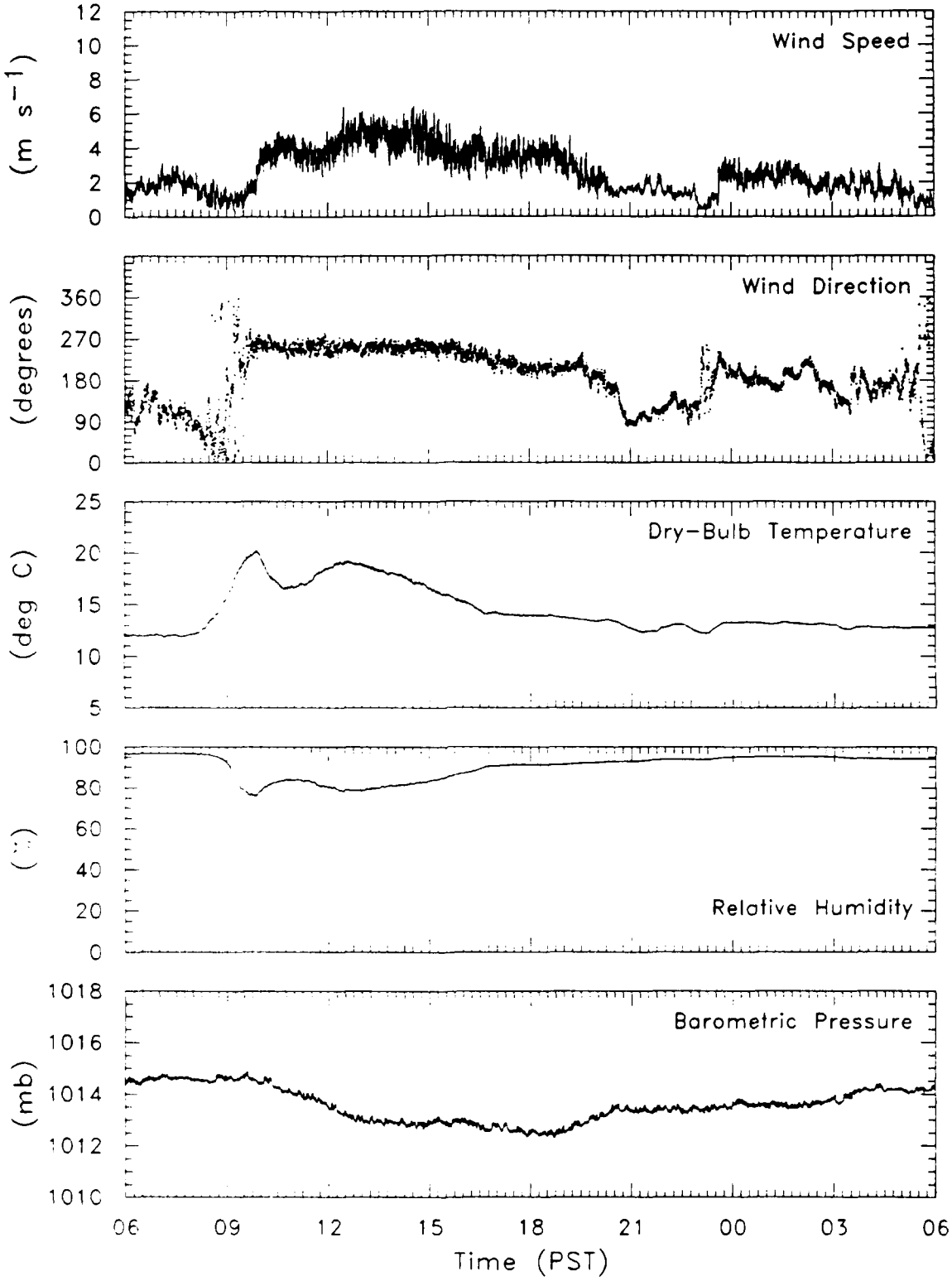
SODAR Triangle, Eastern Vertex (NEPRF) – 19 Sept 1987



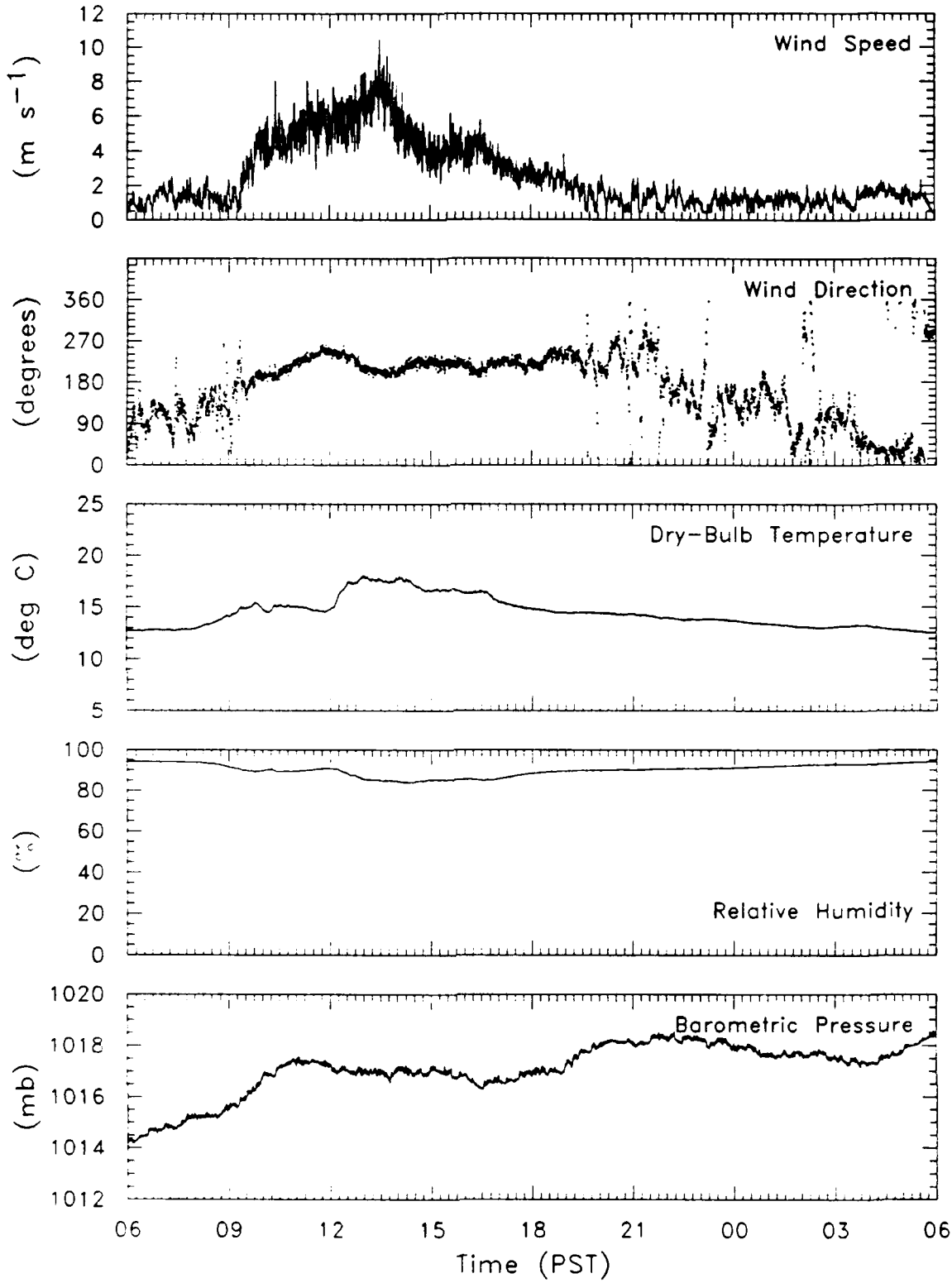
SODAR Triangle, Eastern Vertex (NEPRF) – 20 Sept 1987



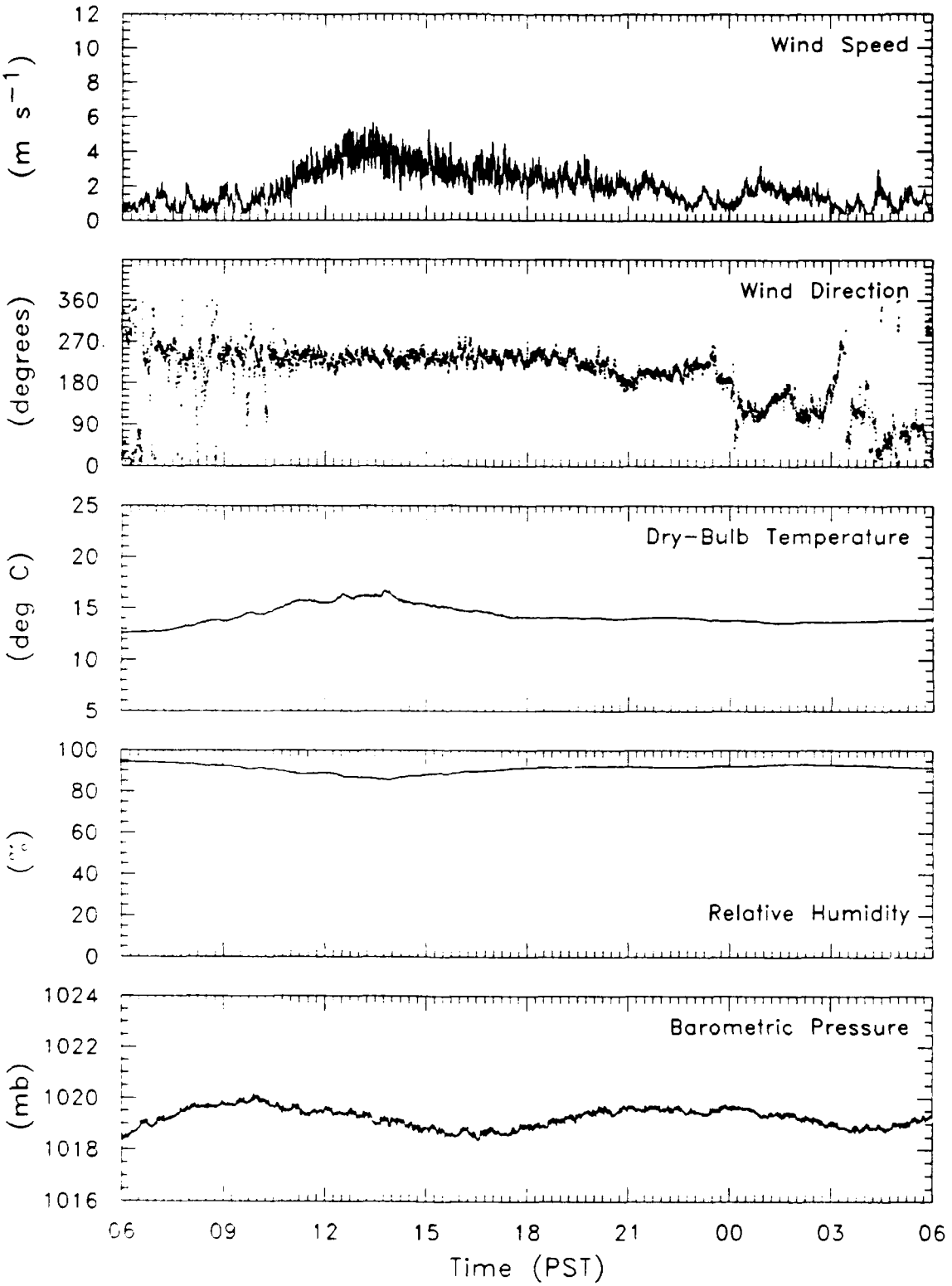
SODAR Triangle, Eastern Vertex (NEPRF) - 21 Sept 1987



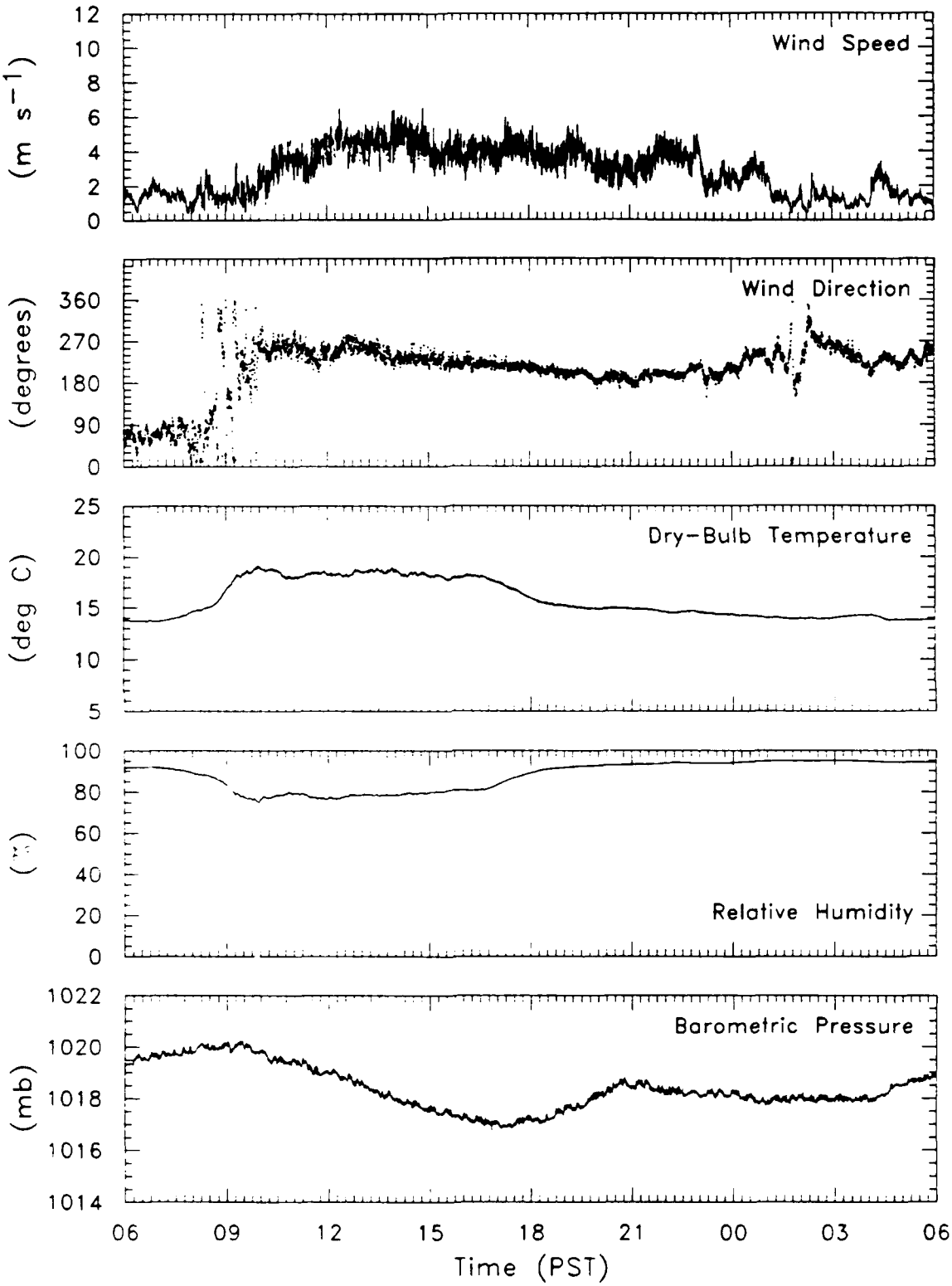
SODAR Triangle, Eastern Vertex (NEPRF) - 22 Sept 1987



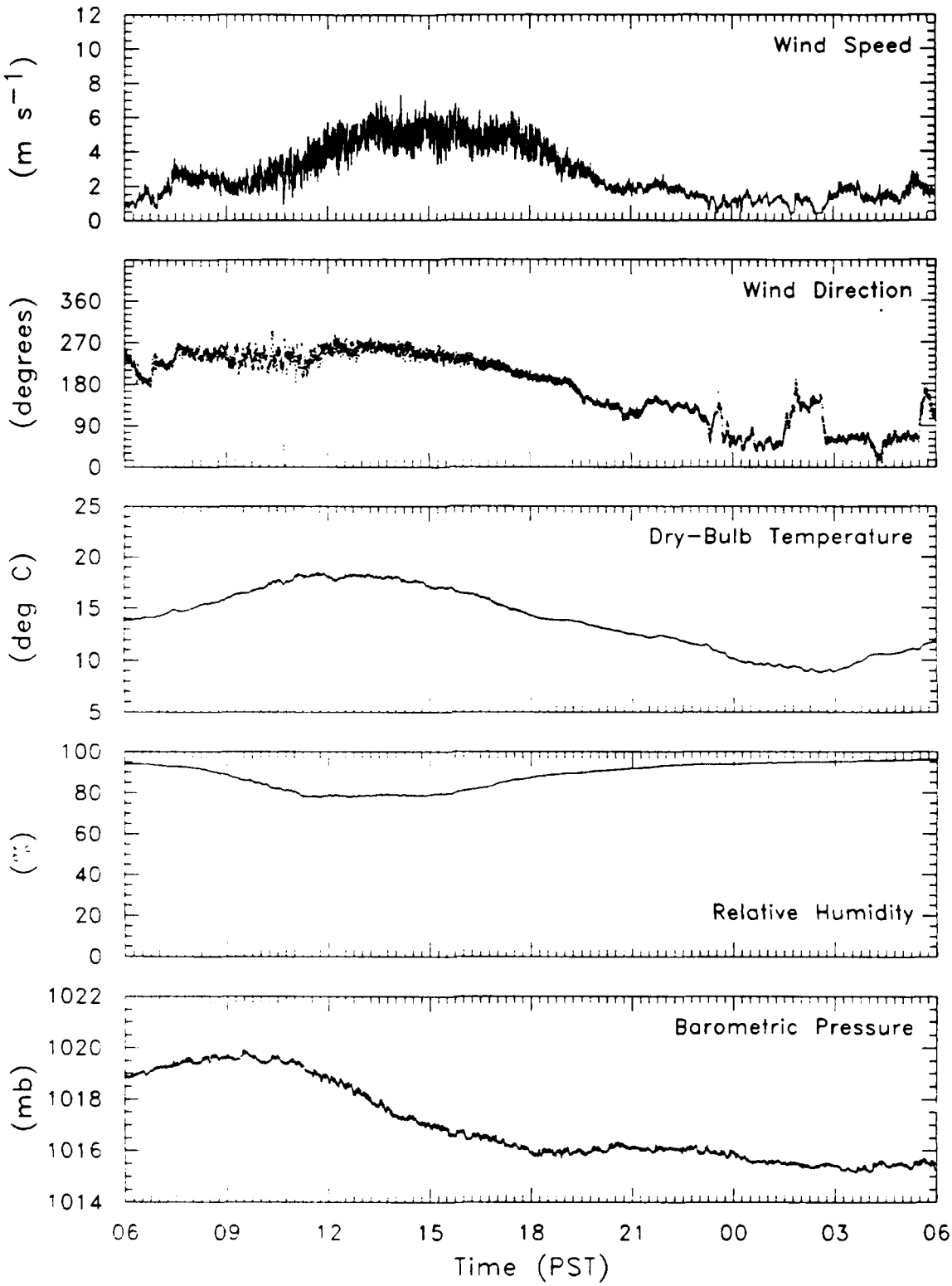
SODAR Triangle, Eastern Vertex (NEPRF) – 23 Sept 1987



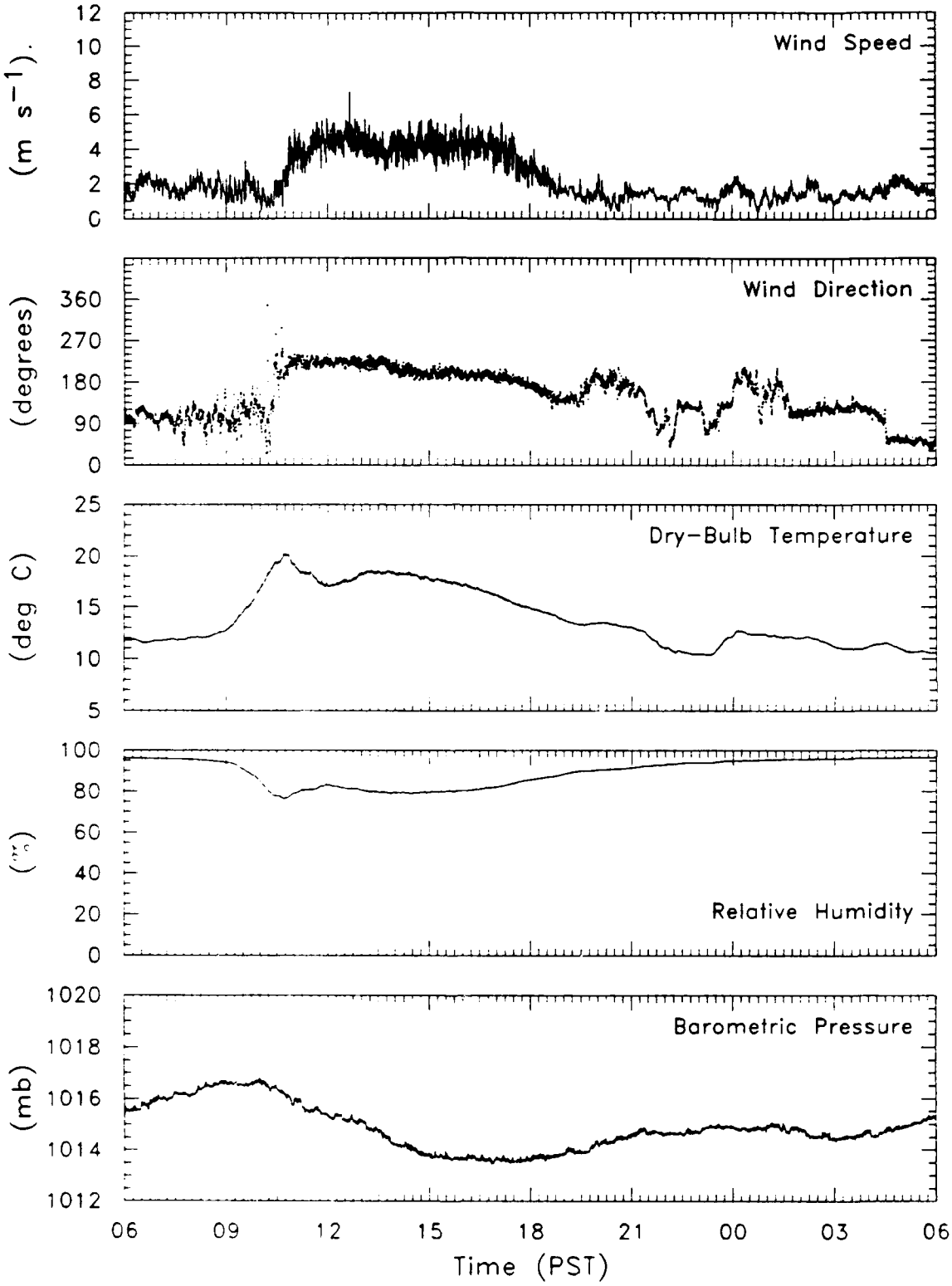
SODAR Triangle, Eastern Vertex (NEPRF) - 24 Sept 1987



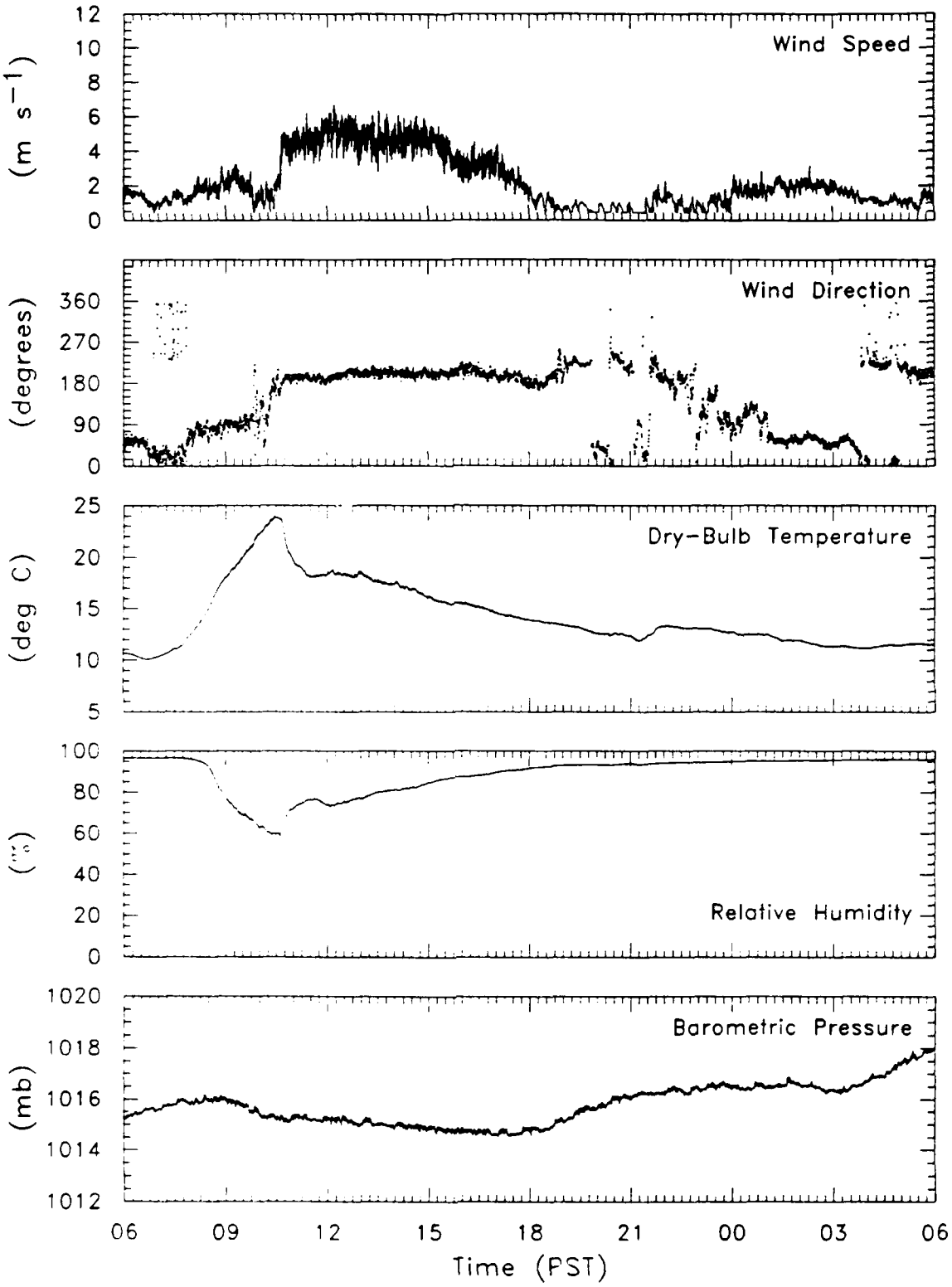
SODAR Triangle, Eastern Vertex (NEPRF) – 25 Sept 1987



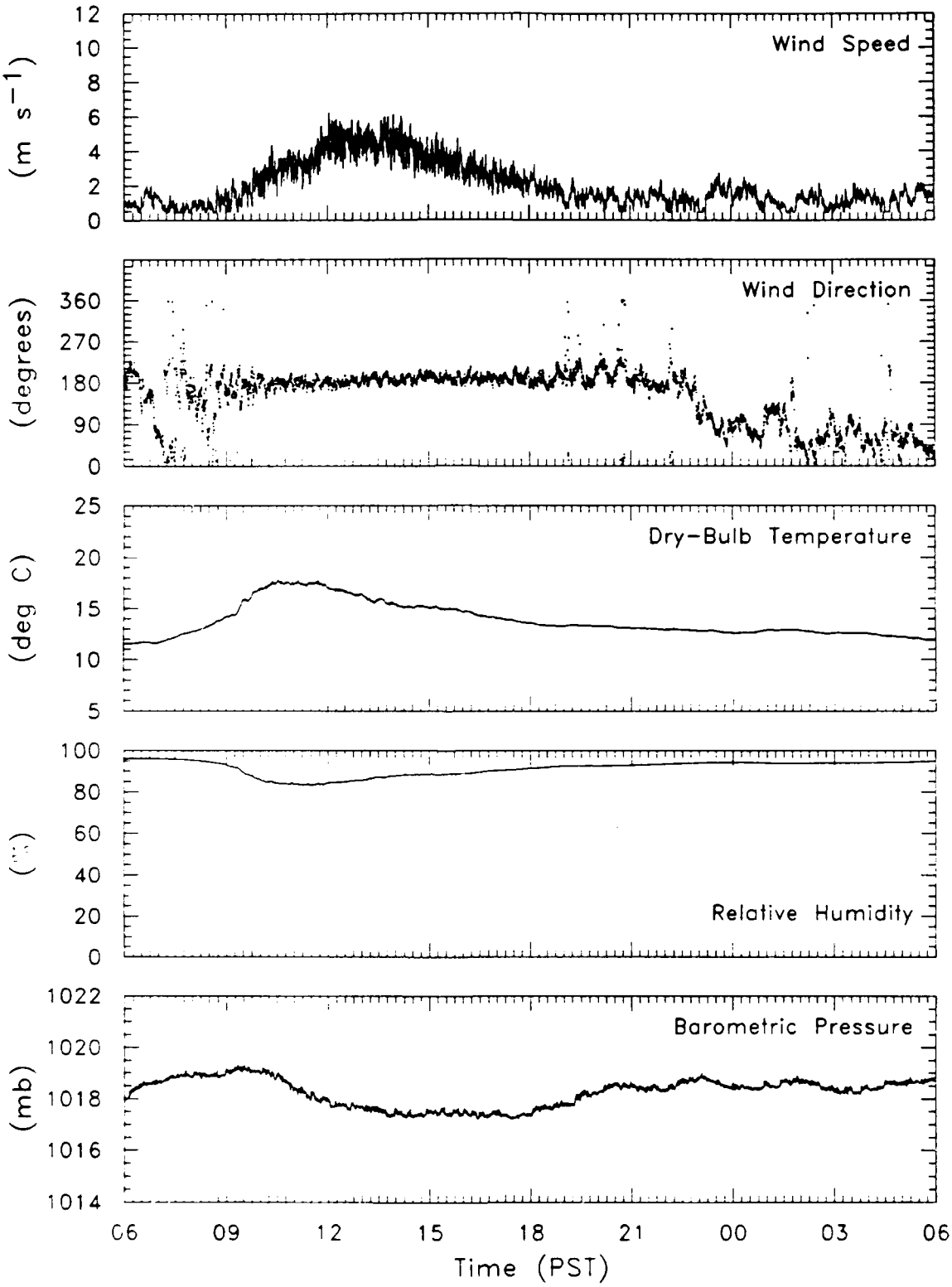
SODAR Triangle, Eastern Vertex (NEPRF) - 26 Sept 1987



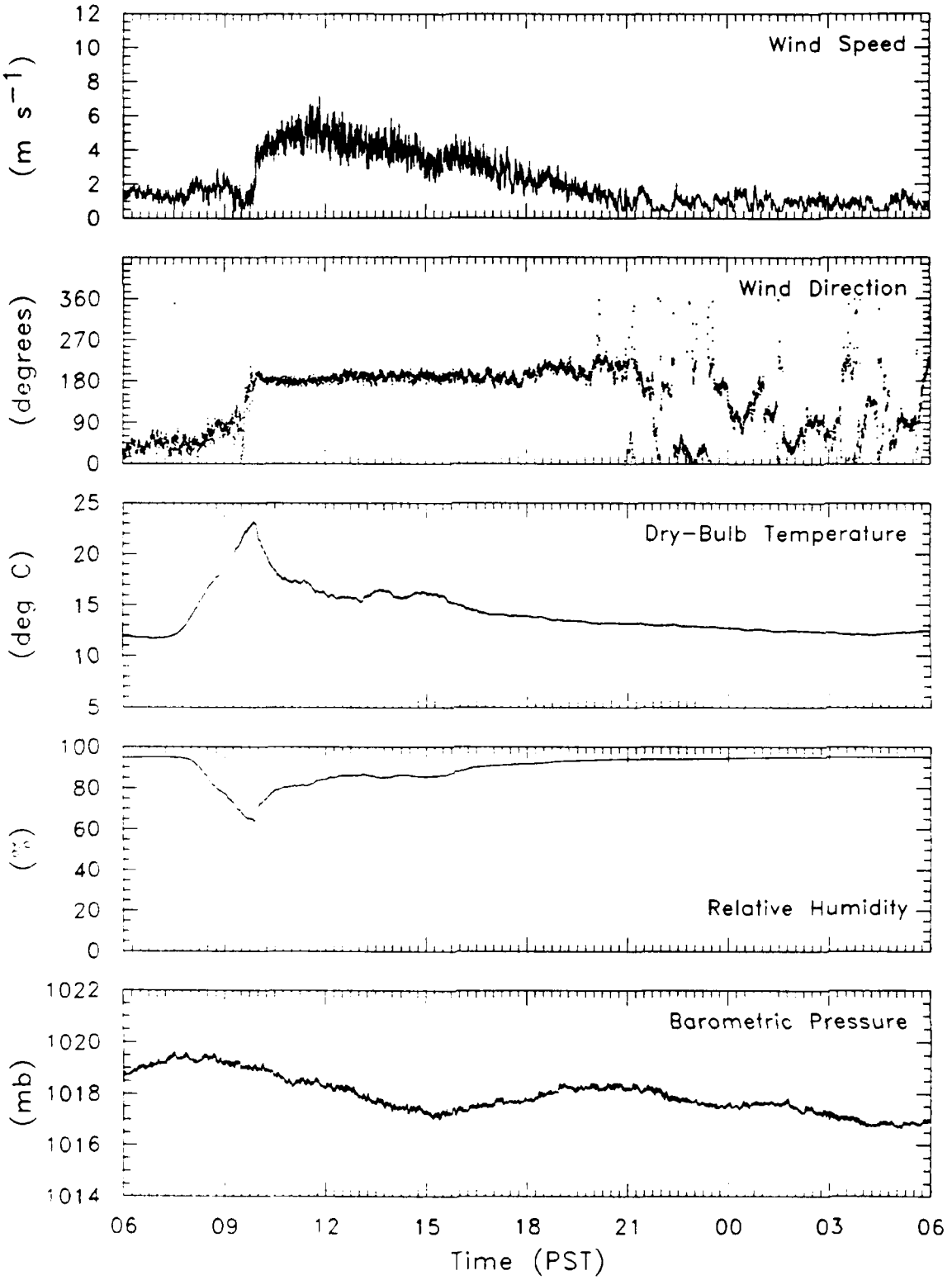
SODAR Triangle, Eastern Vertex (NEPRF) – 27 Sept 1987



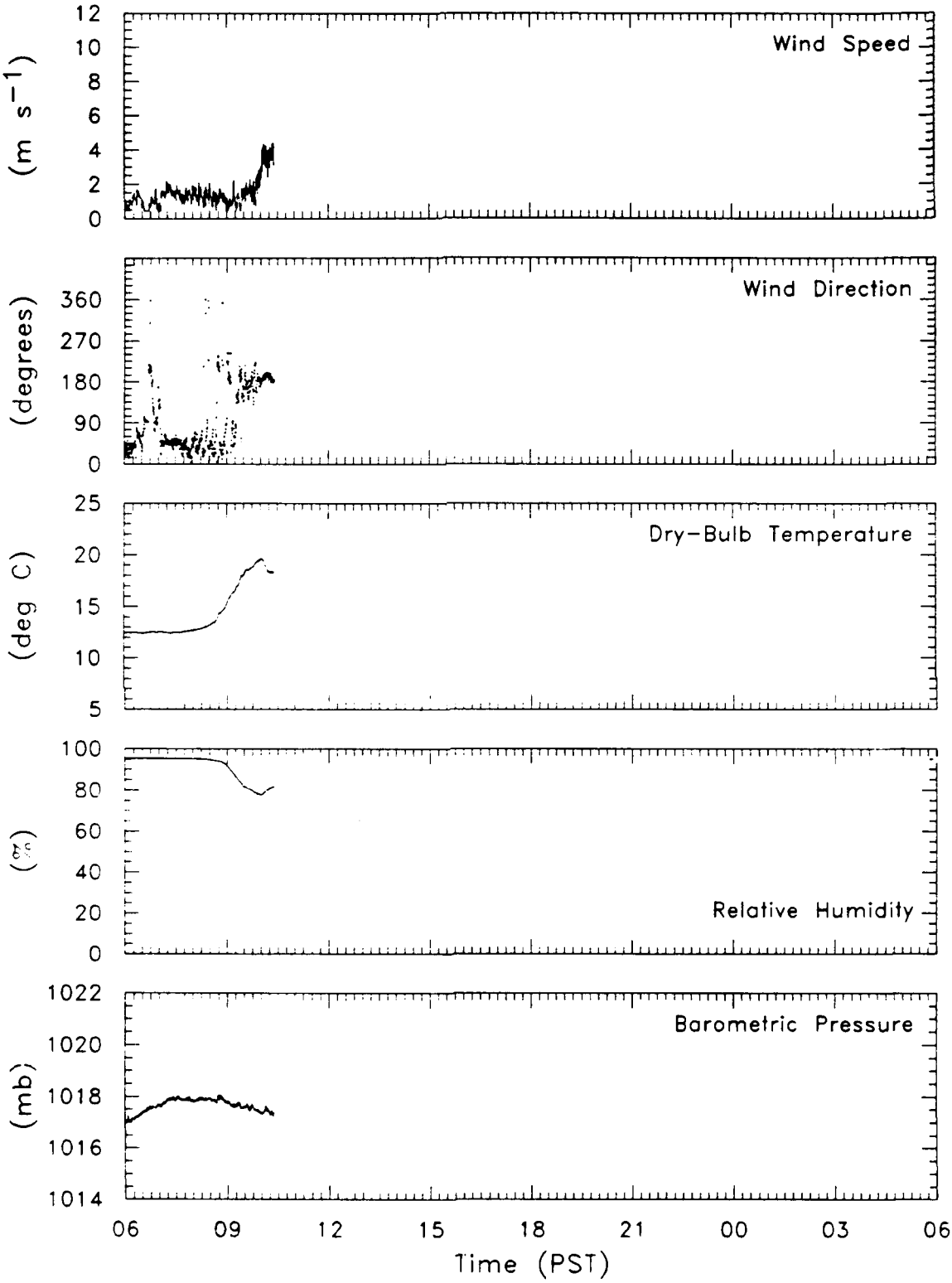
SODAR Triangle, Eastern Vertex (NEPRF) – 28 Sept 1987



SODAR Triangle, Eastern Vertex (NEPRF) – 29 Sept 1987



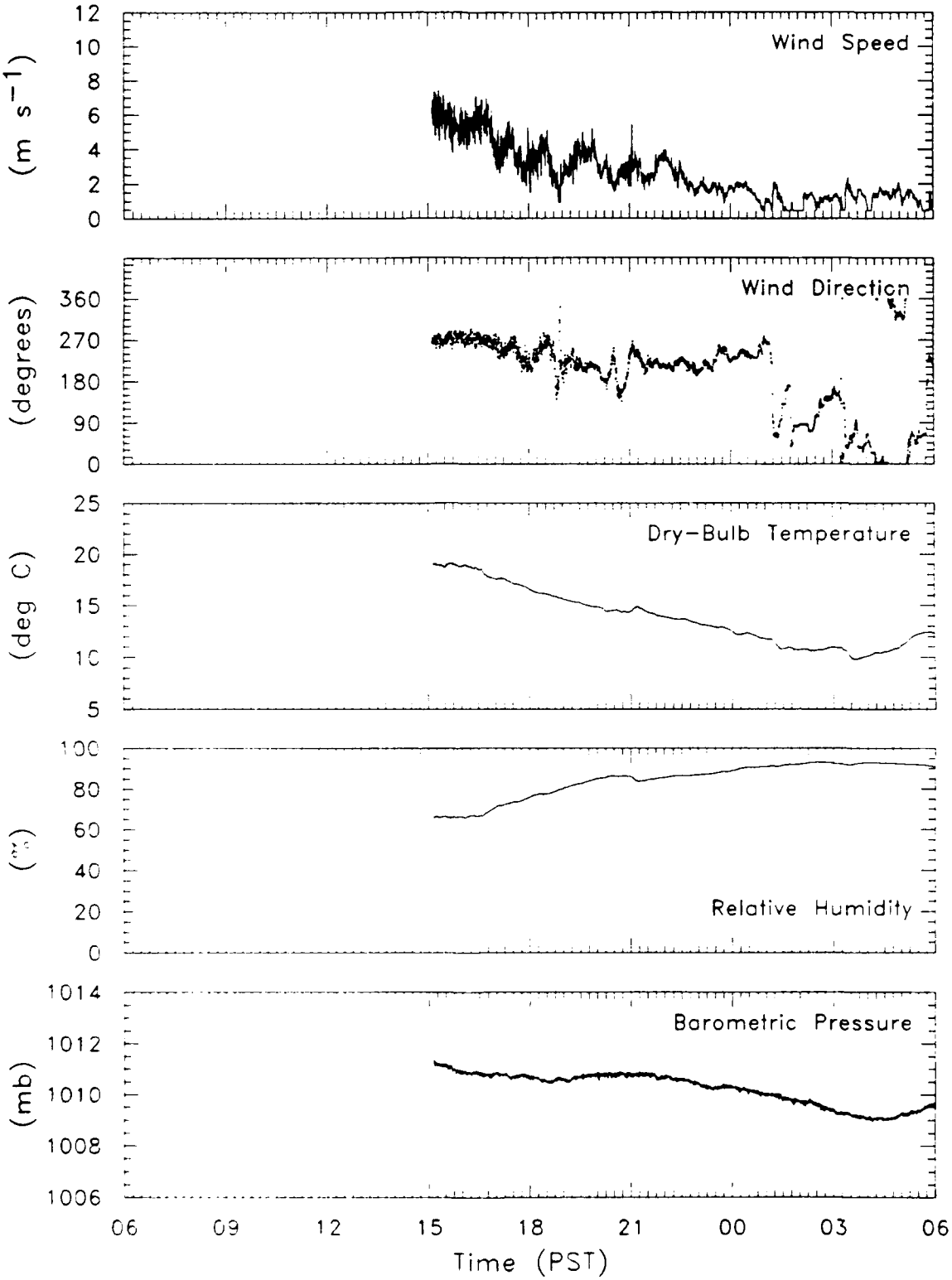
SODAR Triangle, Eastern Vertex (NEPRF) – 30 Sept 1987



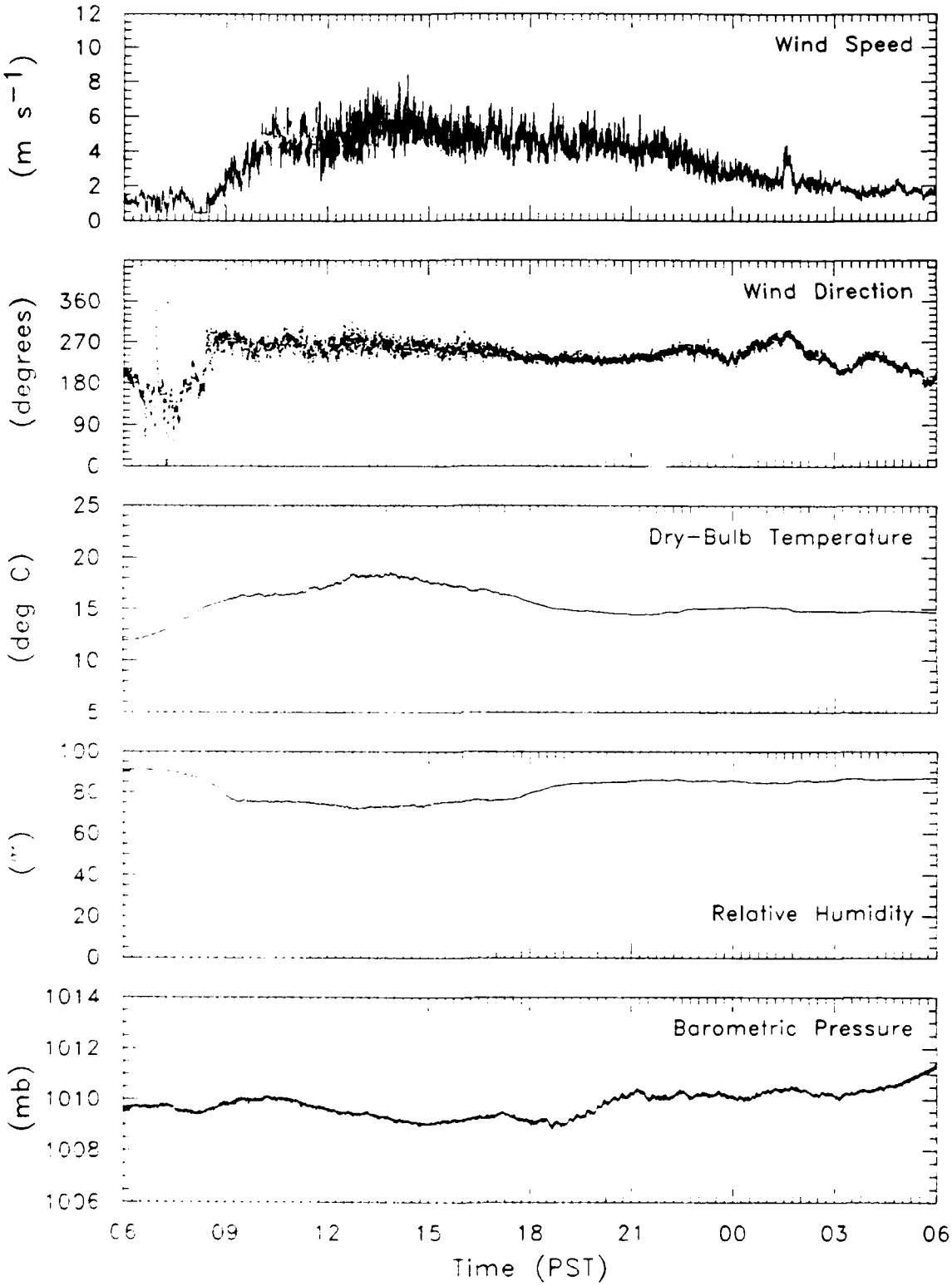
7. TIME SERIES, WESTERN VERTEX OF THE SODAR TRIANGLE--NEPRF

This section presents graphs of data collected by the Berkeley Solar Group under contract to NEPRF at the western vertex of the sodar triangle (Fig. 1).

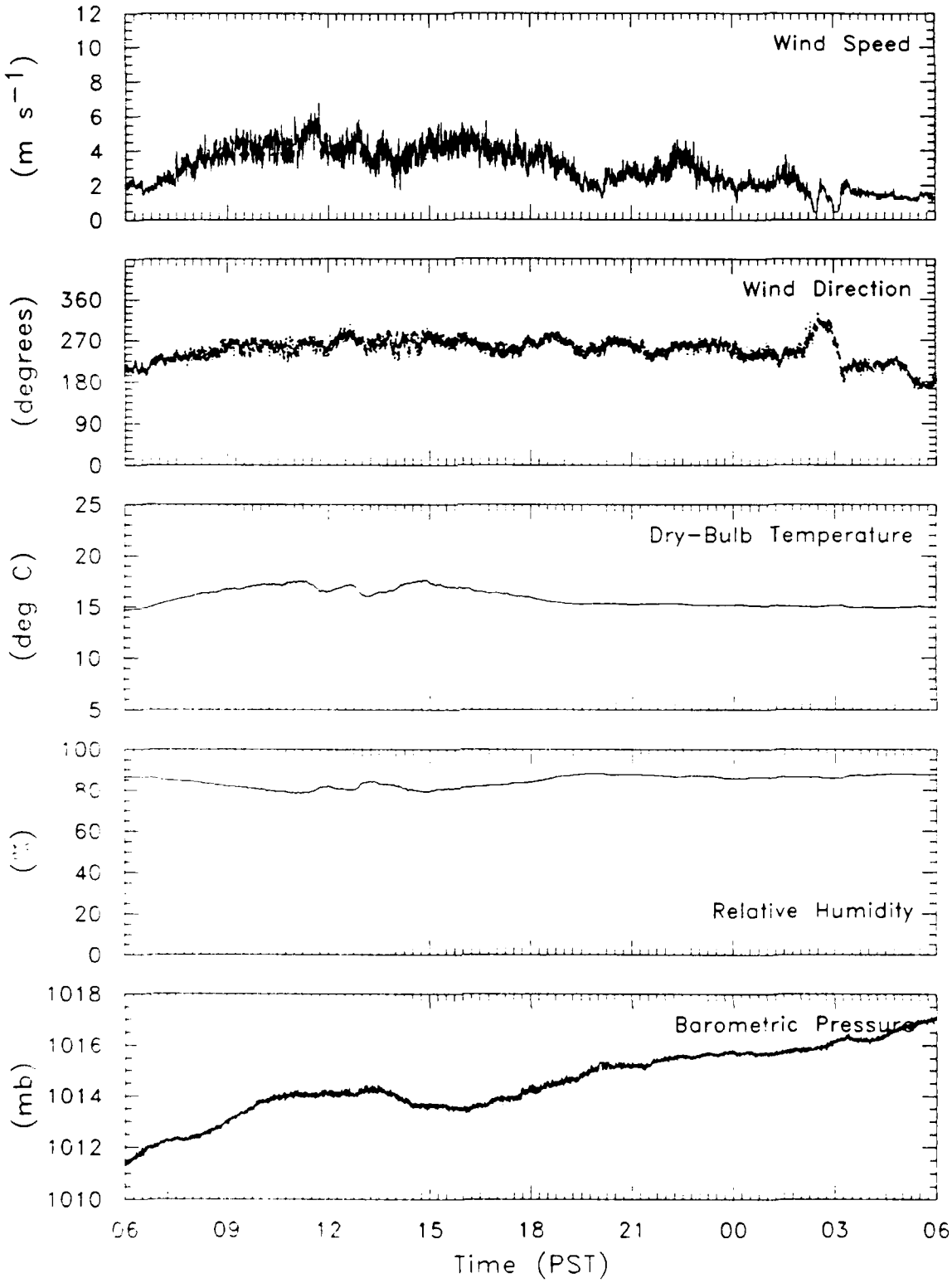
SODAR Triangle, Western Vertex (NEPRF) – 11 Sept 1987



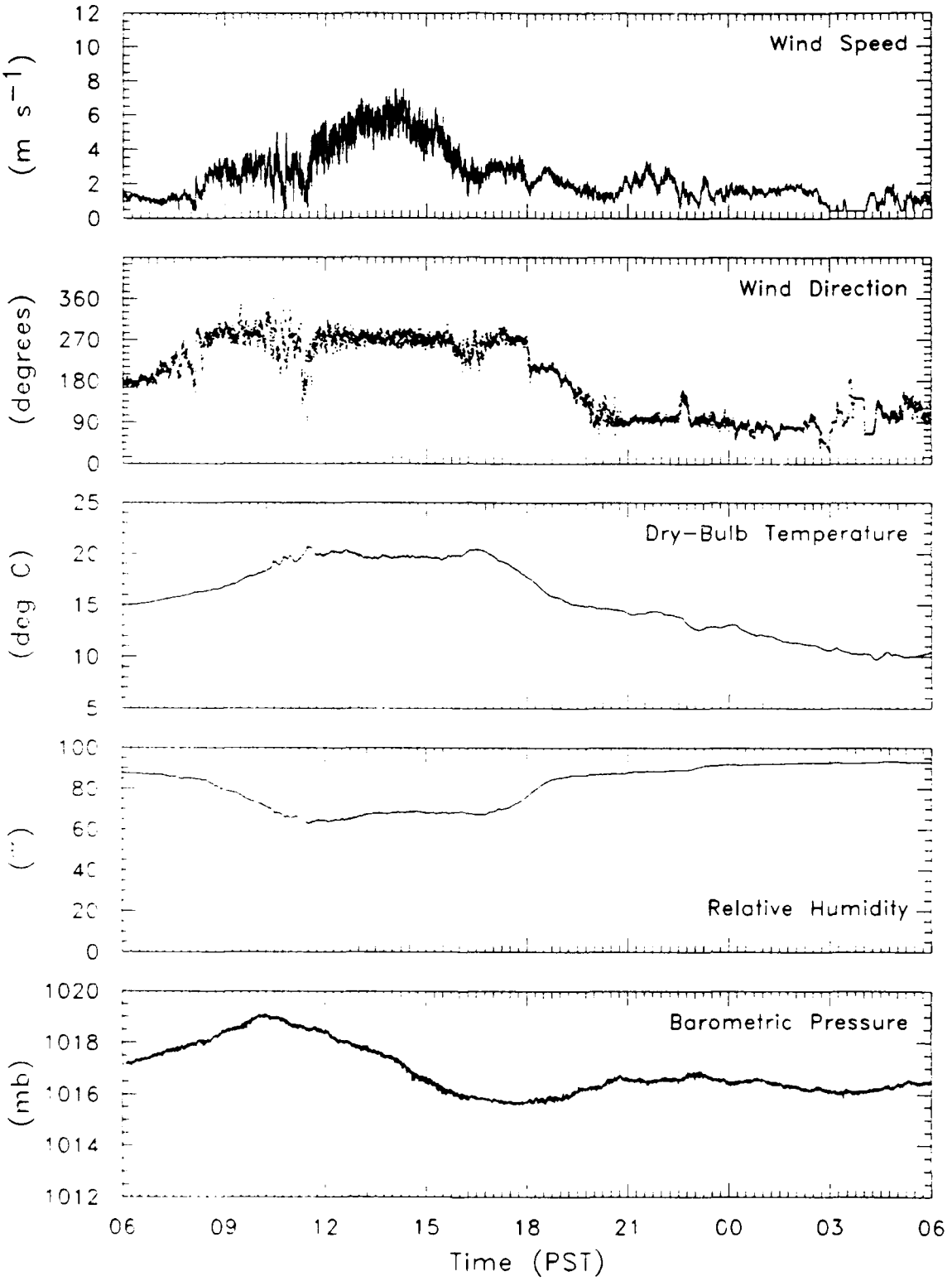
SODAR Triangle, Western Vertex (NEPRF) – 12 Sept 1987



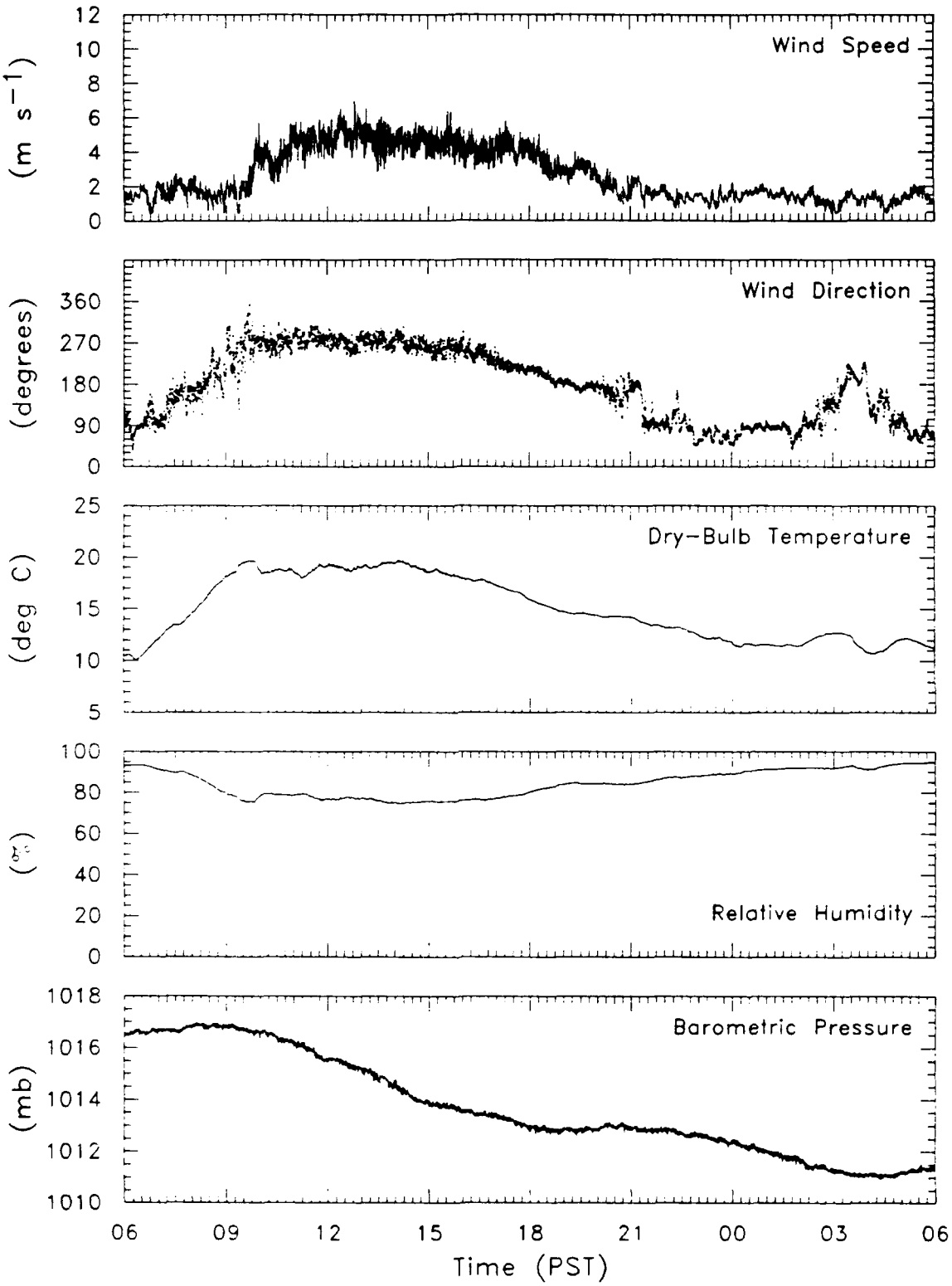
SODAR Triangle, Western Vertex (NEPRF) – 13 Sept 1987



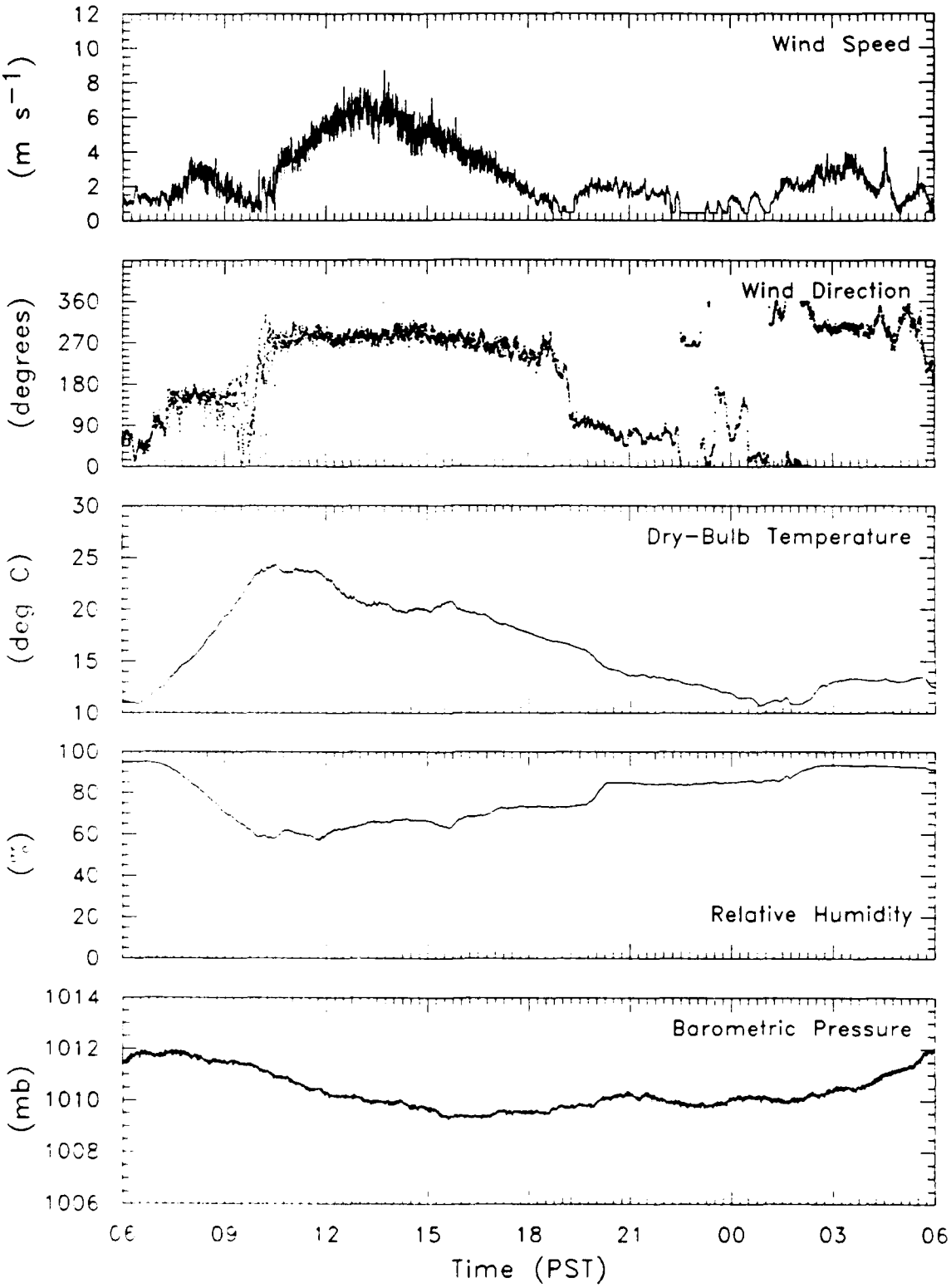
SODAR Triangle, Western Vertex (NEPRF) – 14 Sept 1987



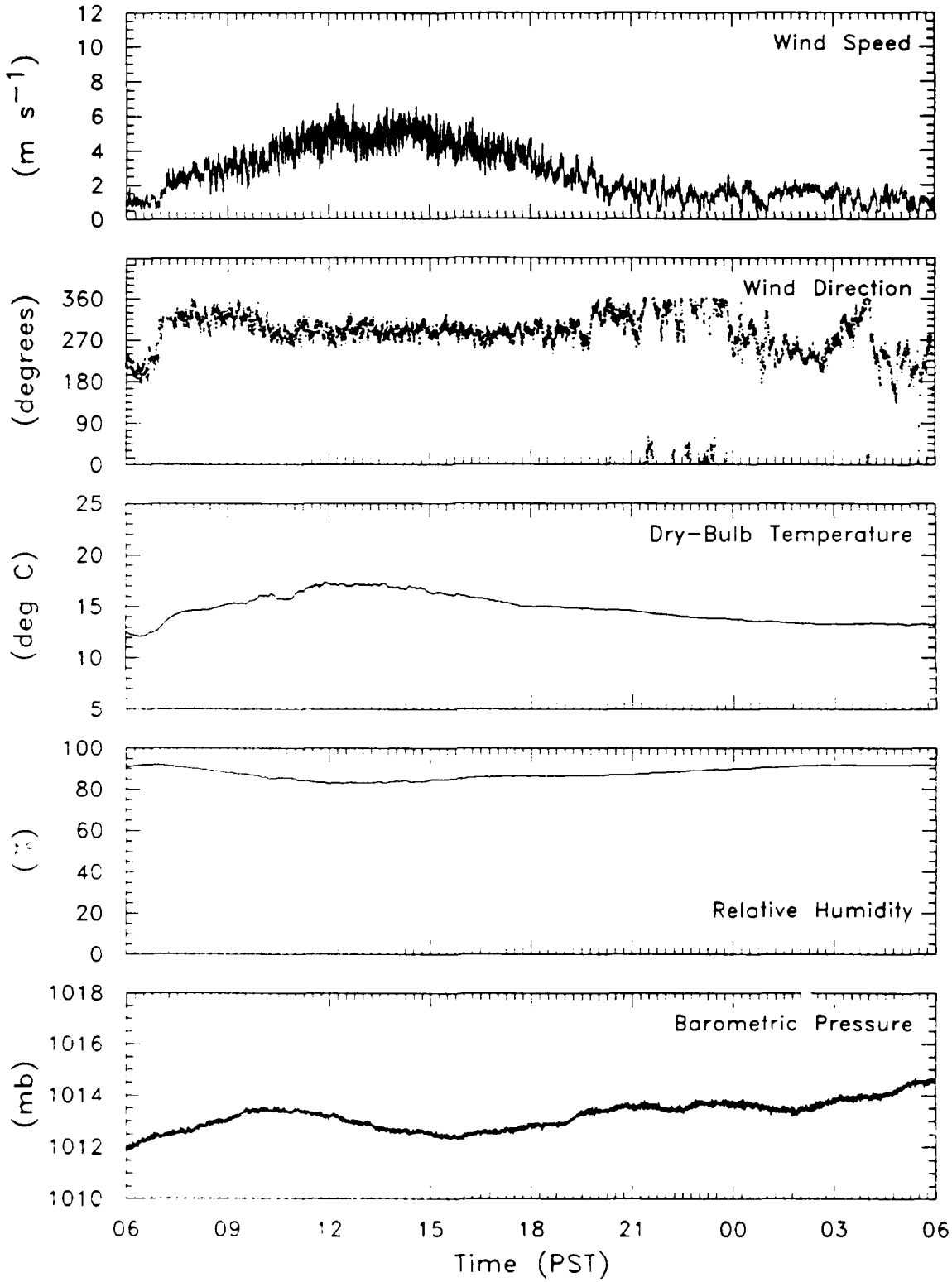
SODAR Triangle, Western Vertex (NEPRF) – 15 Sept 1987



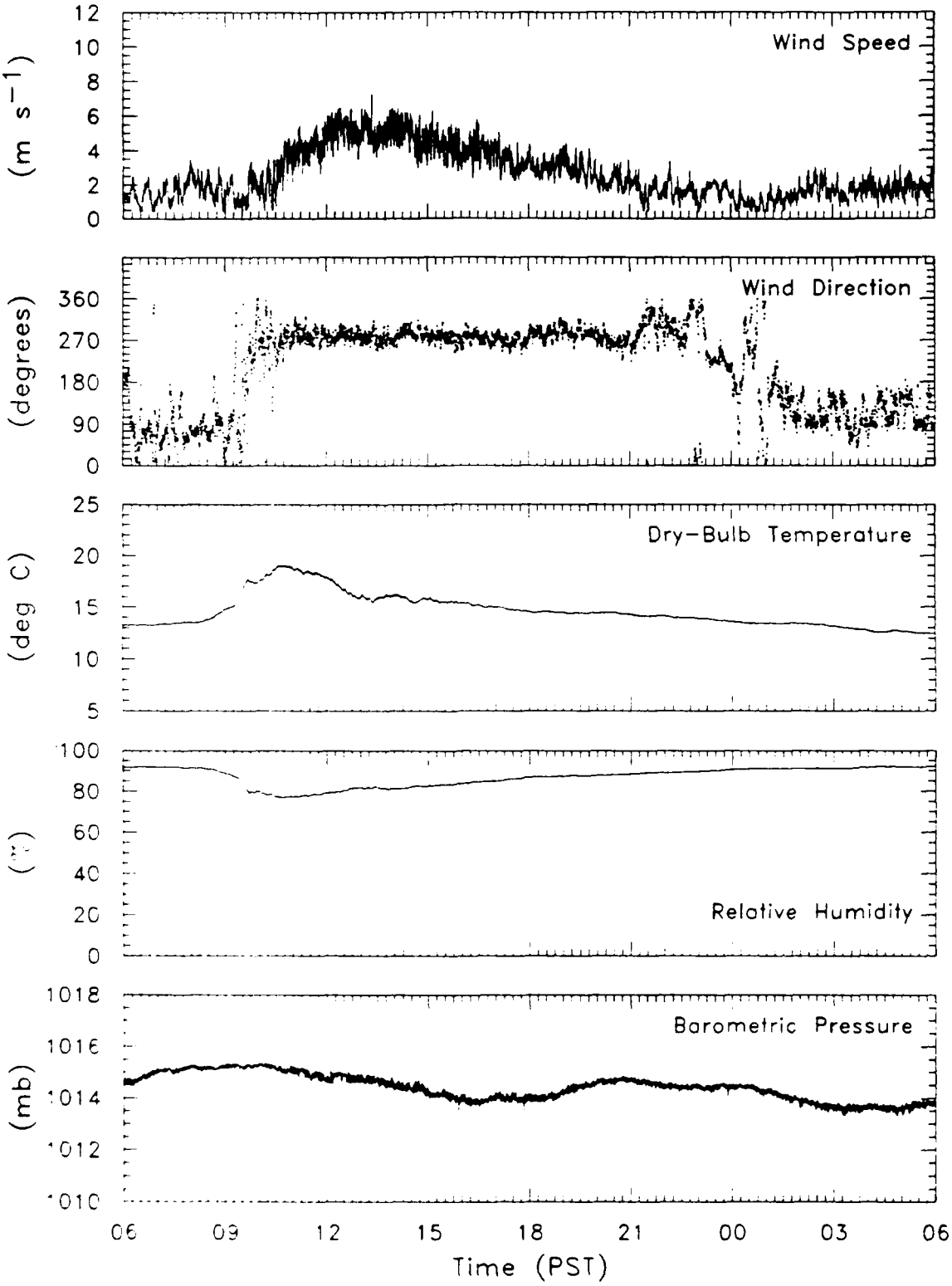
SODAR Triangle, Western Vertex (NEPRF) – 16 Sept 1987



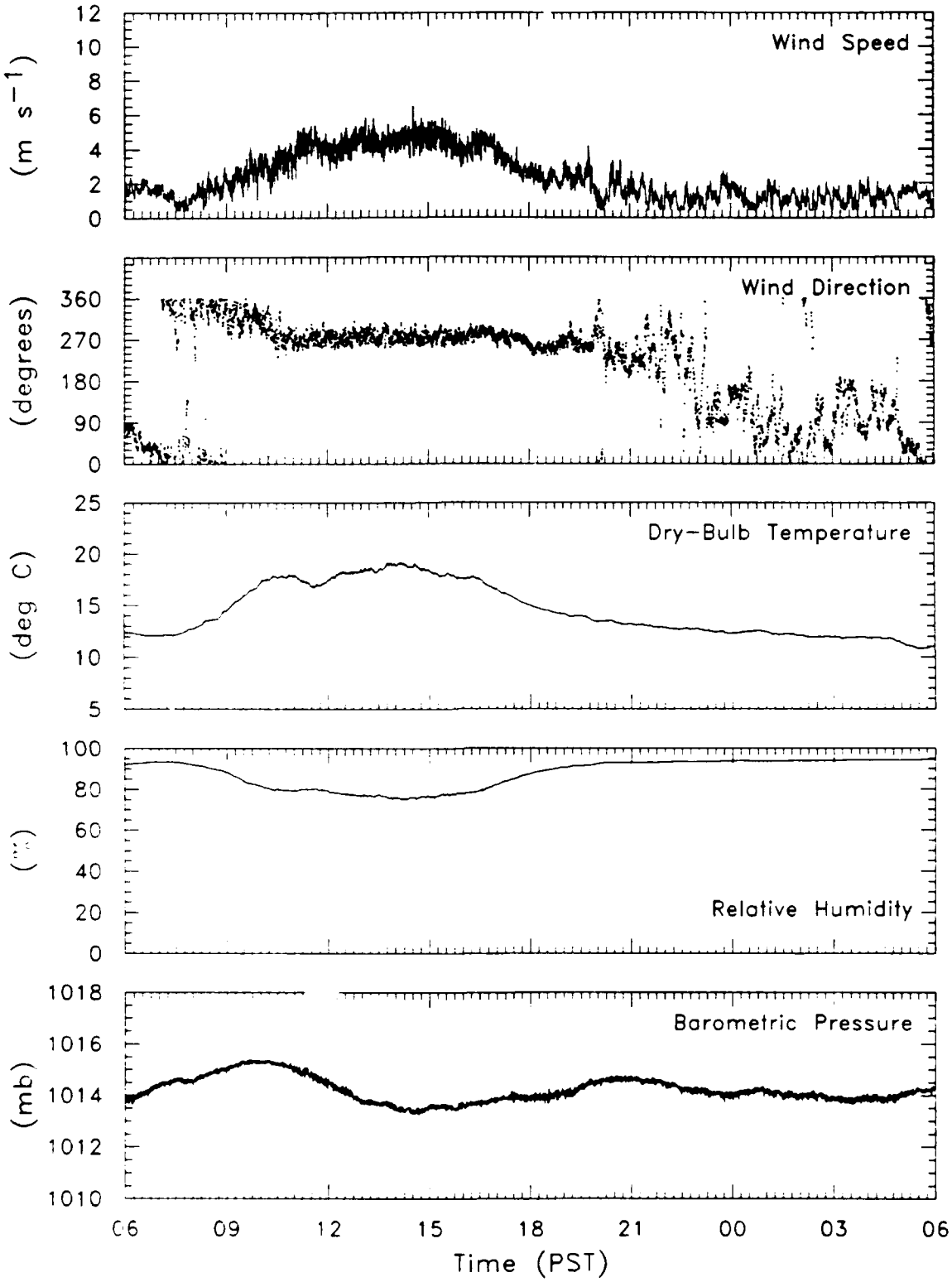
SODAR Triangle, Western Vertex (NEPRF) – 17 Sept 1987



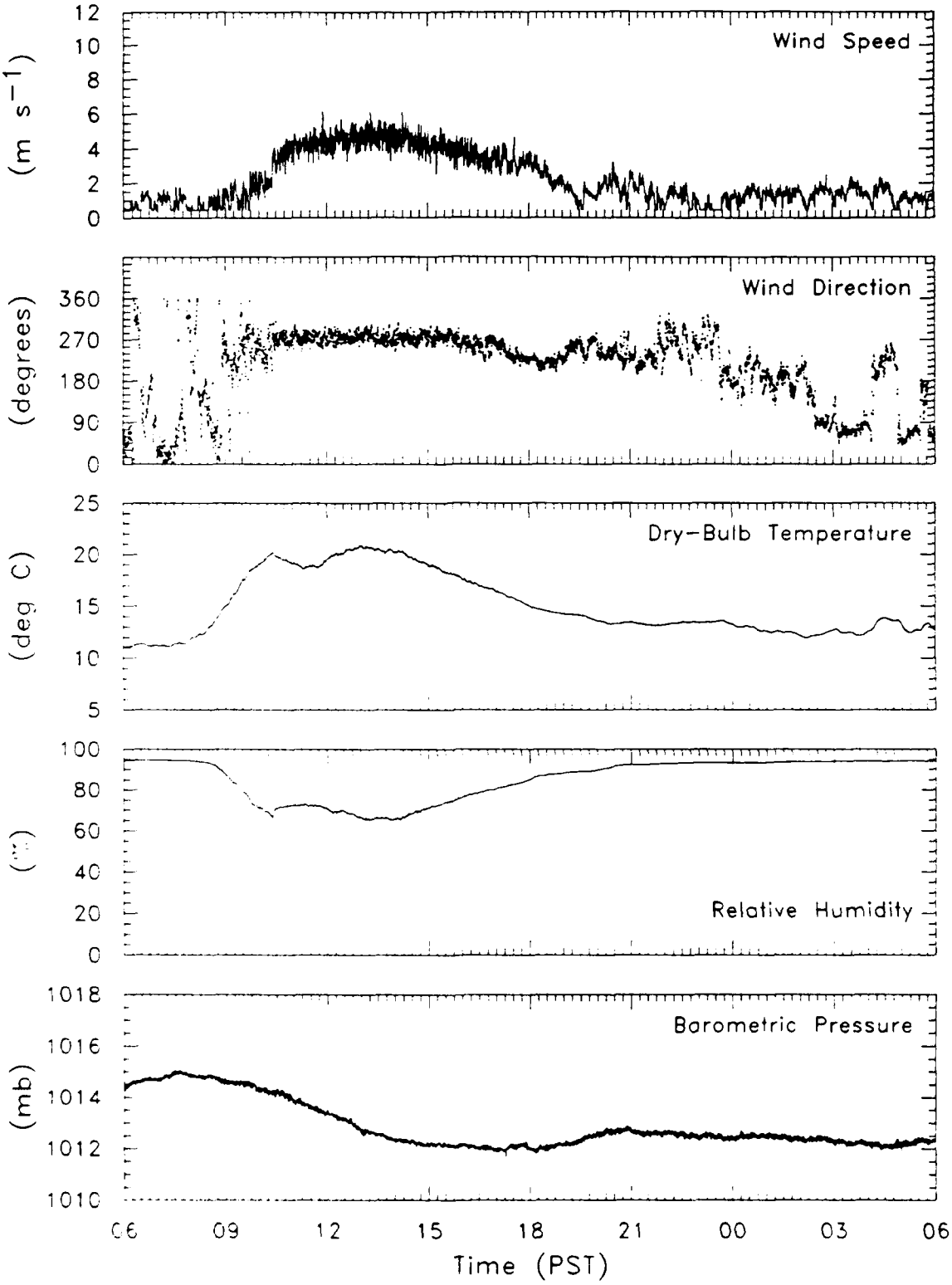
SODAR Triangle, Western Vertex (NEPRF) – 18 Sept 1987



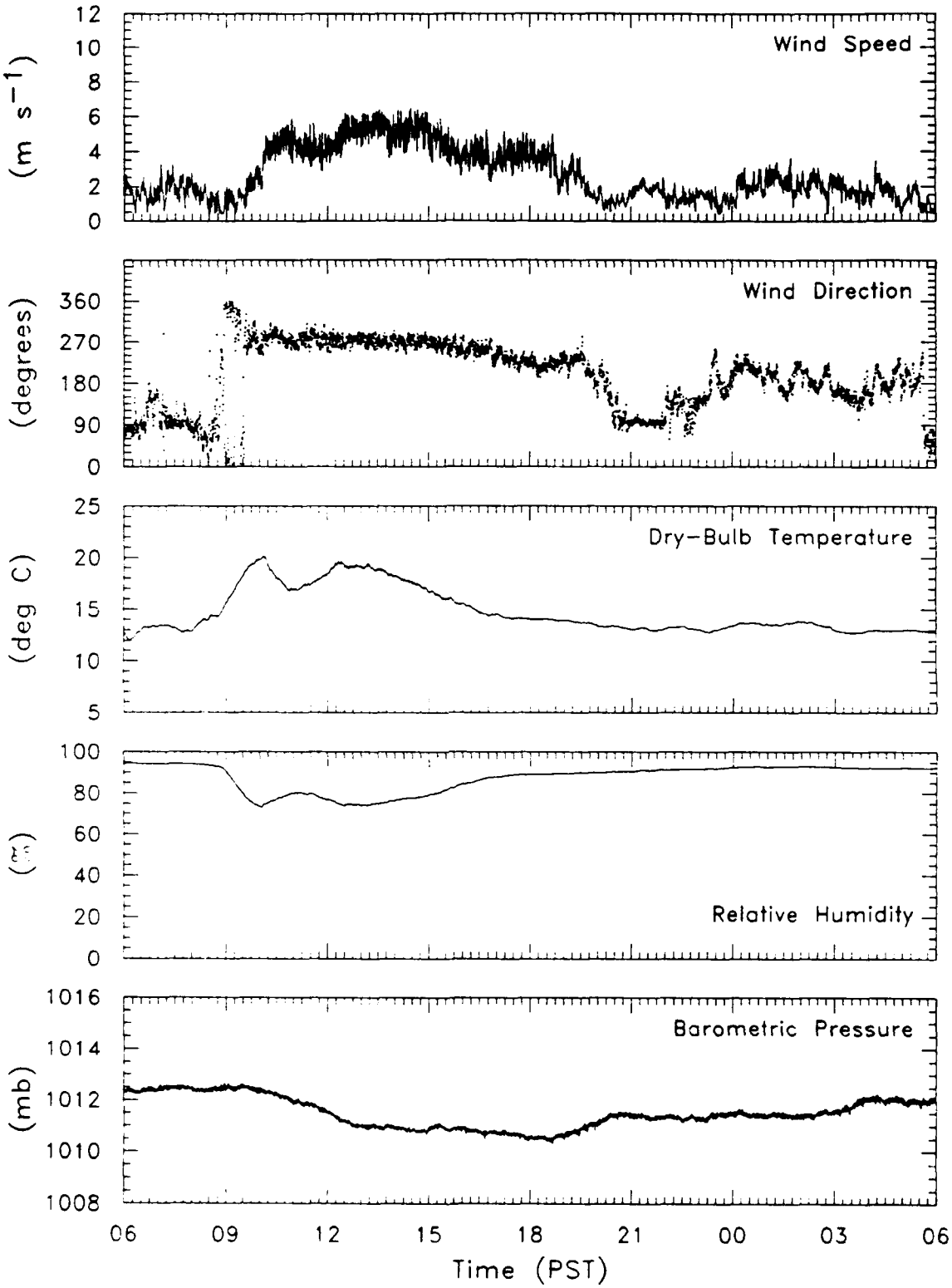
SODAR Triangle, Western Vertex (NEPRF) – 19 Sept 1987



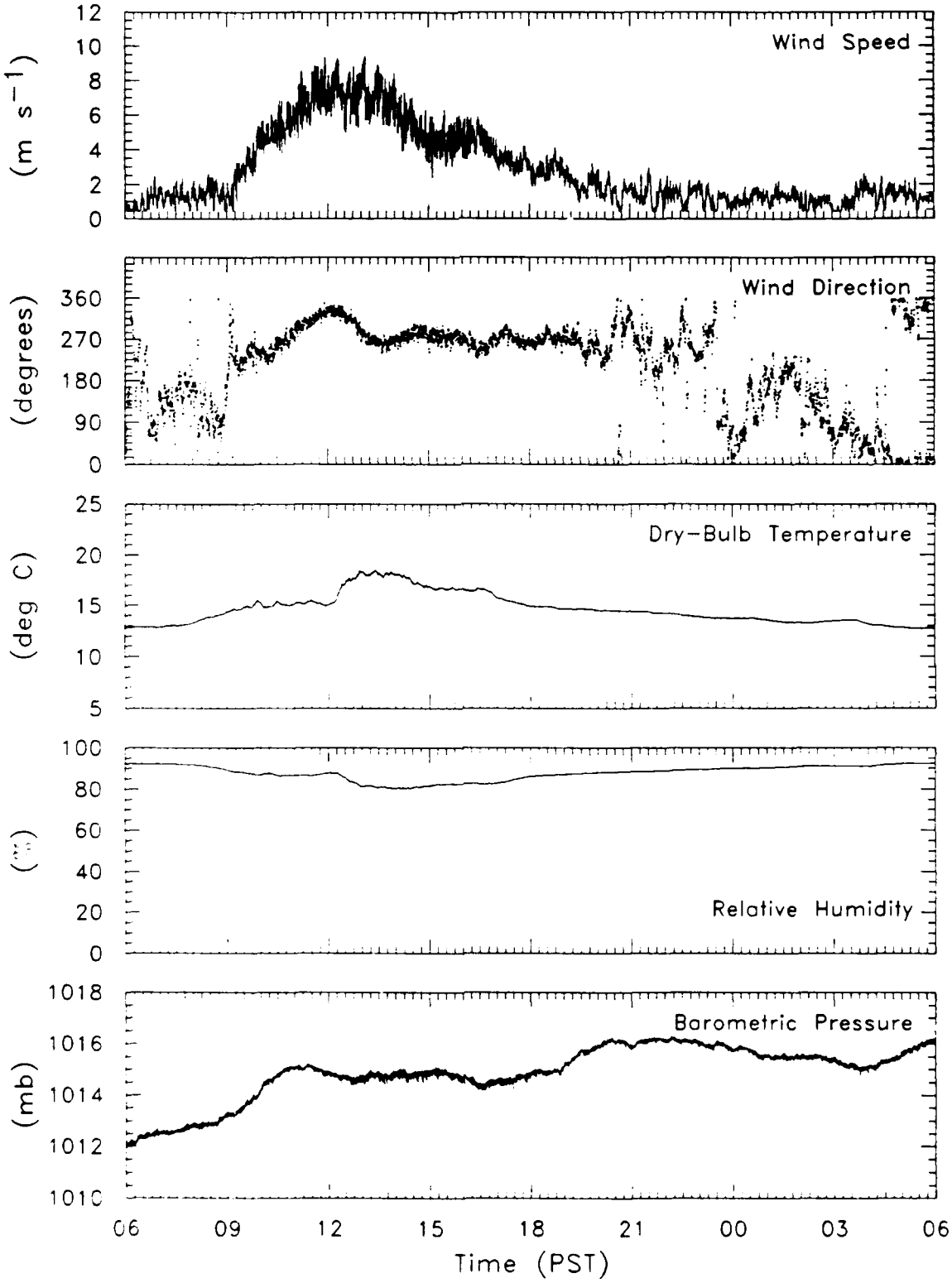
SODAR Triangle, Western Vertex (NEPRF) – 20 Sept 1987



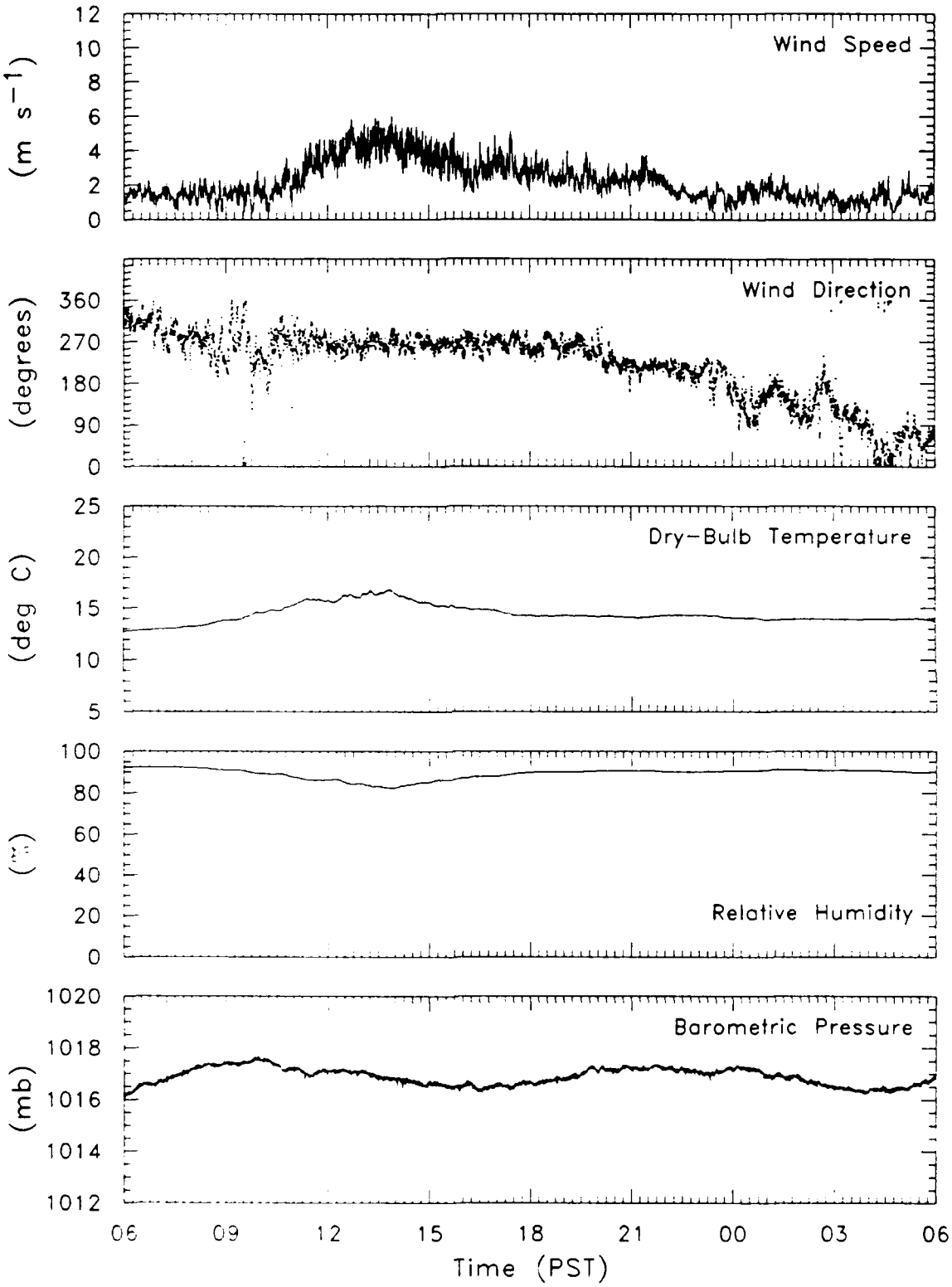
SODAR Triangle, Western Vertex (NEPRF) – 21 Sept 1987



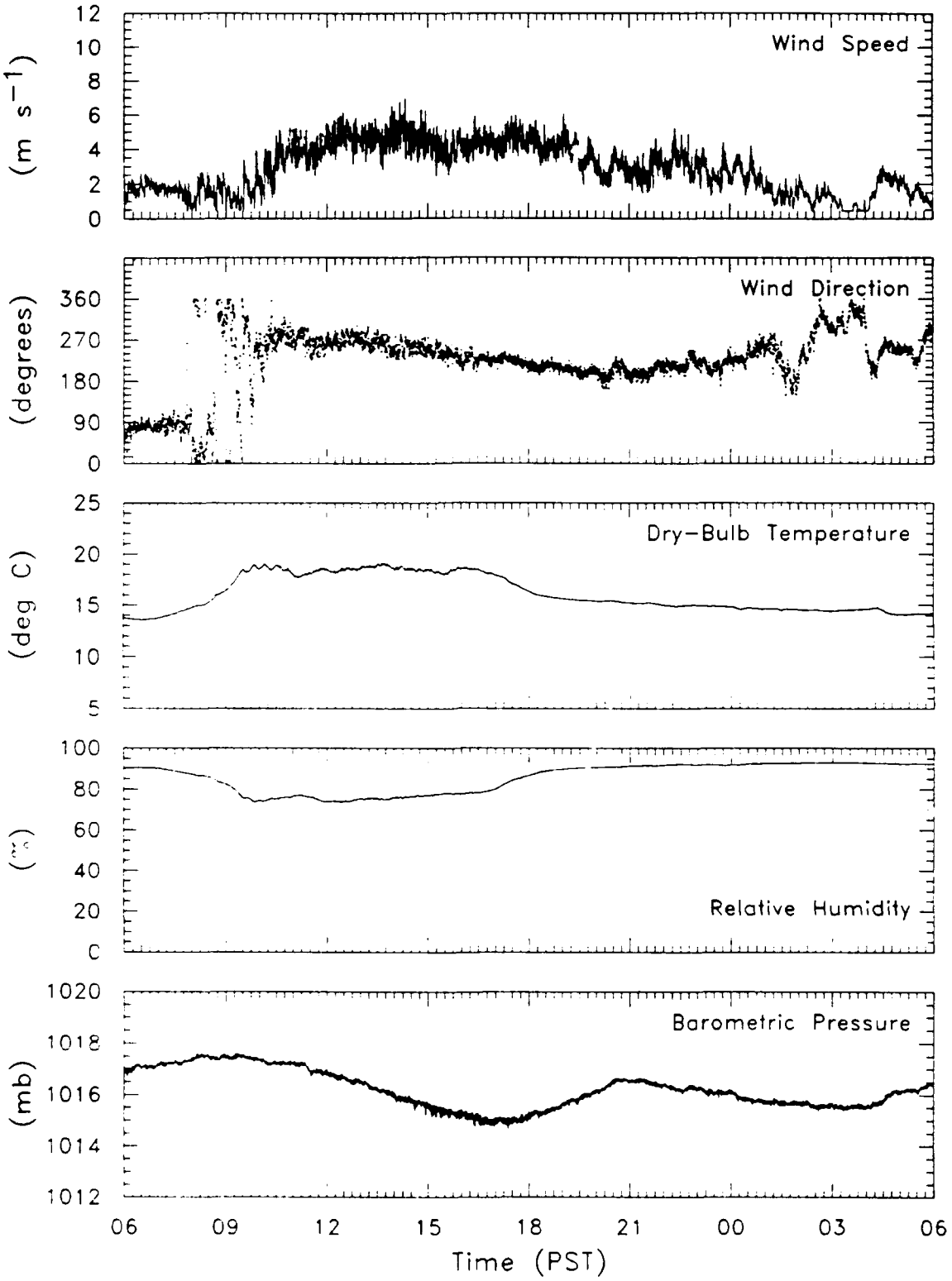
SODAR Triangle, Western Vertex (NEPRF) – 22 Sept 1987



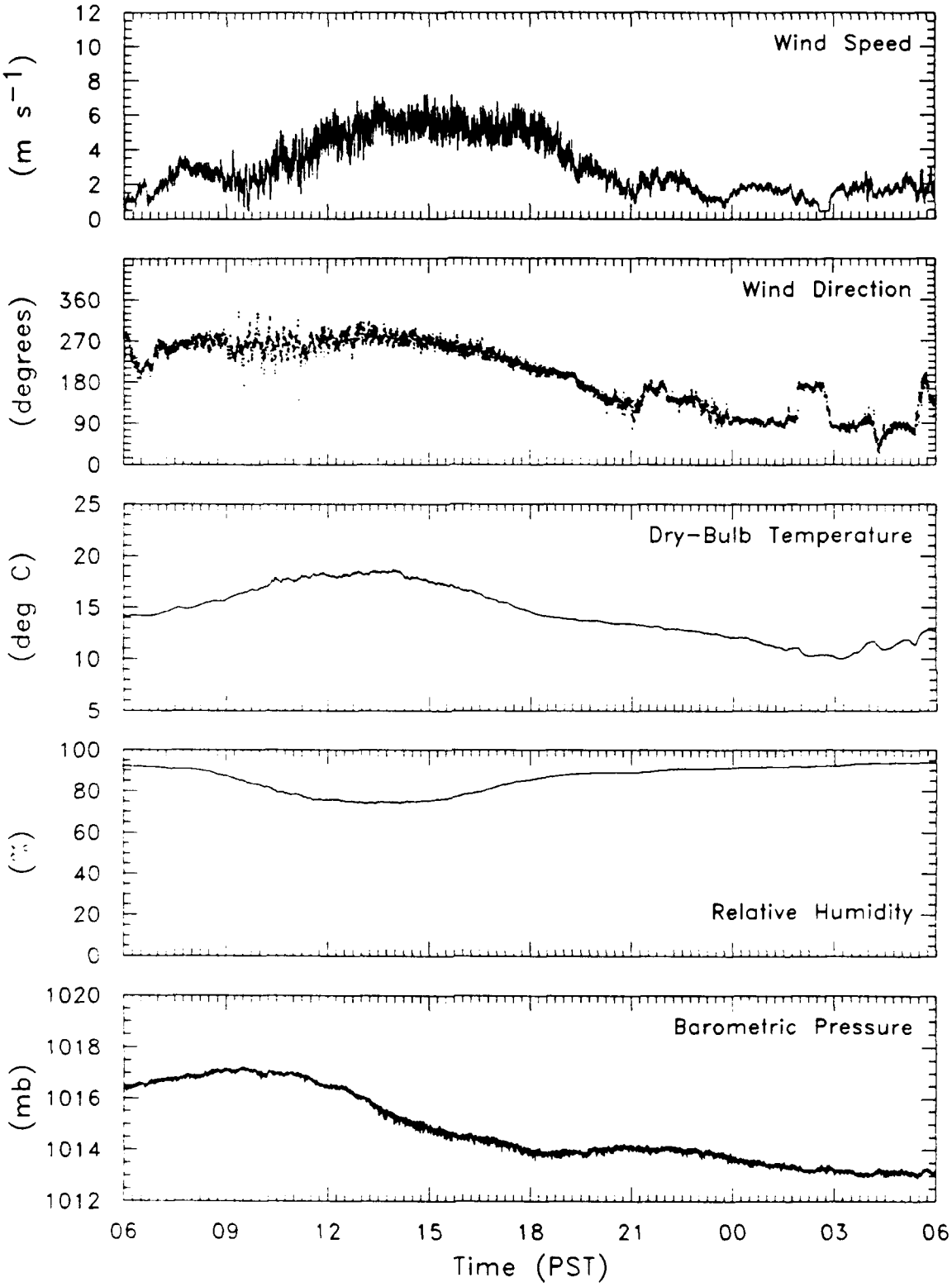
SODAR Triangle, Western Vertex (NEPRF) – 23 Sept 1987



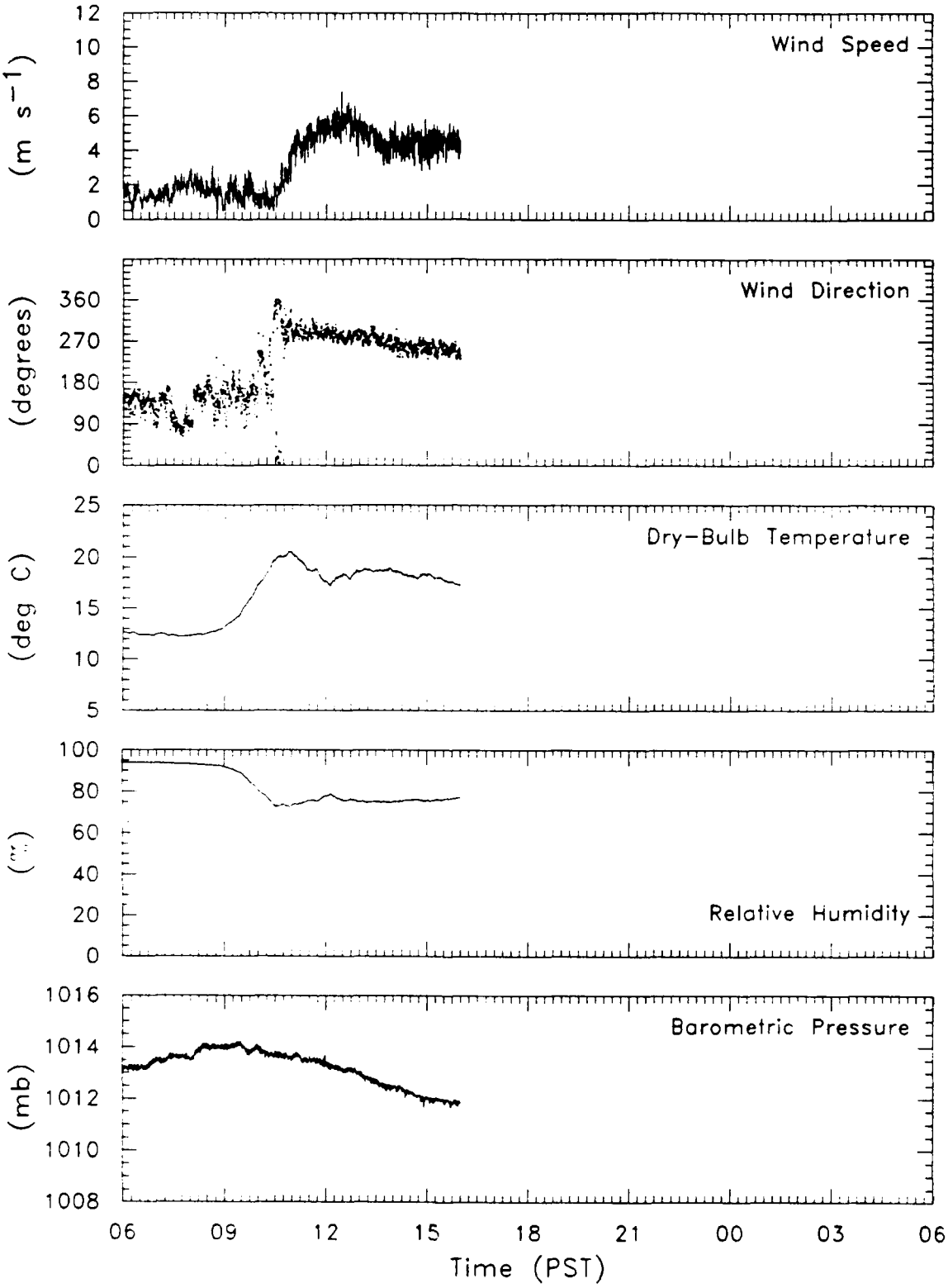
SODAR Triangle, Western Vertex (NEPRF) – 24 Sept 1987



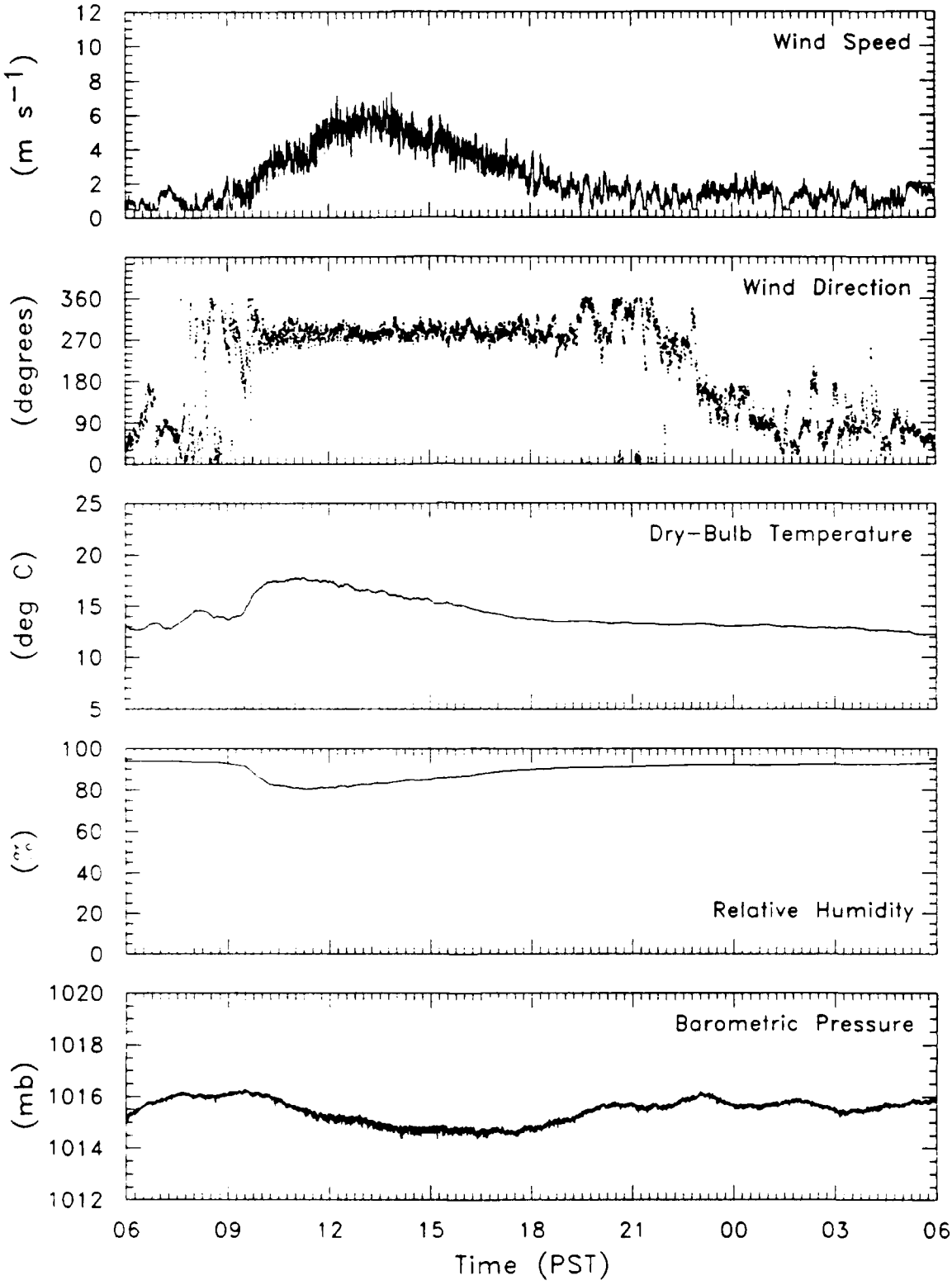
SODAR Triangle, Western Vertex (NEPRF) - 25 Sept 1987



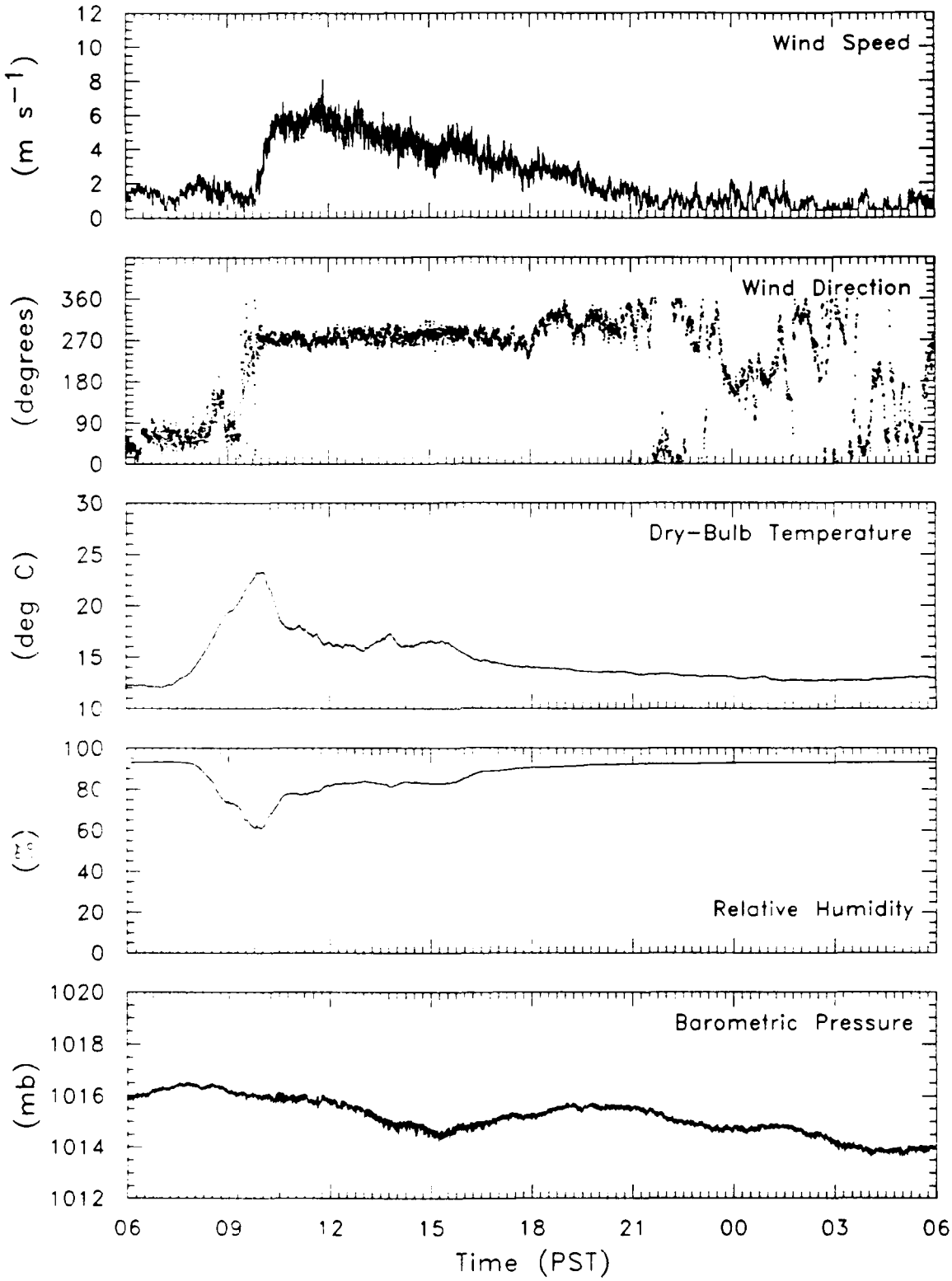
SODAR Triangle, Western Vertex (NEPRF) - 26 Sept 1987



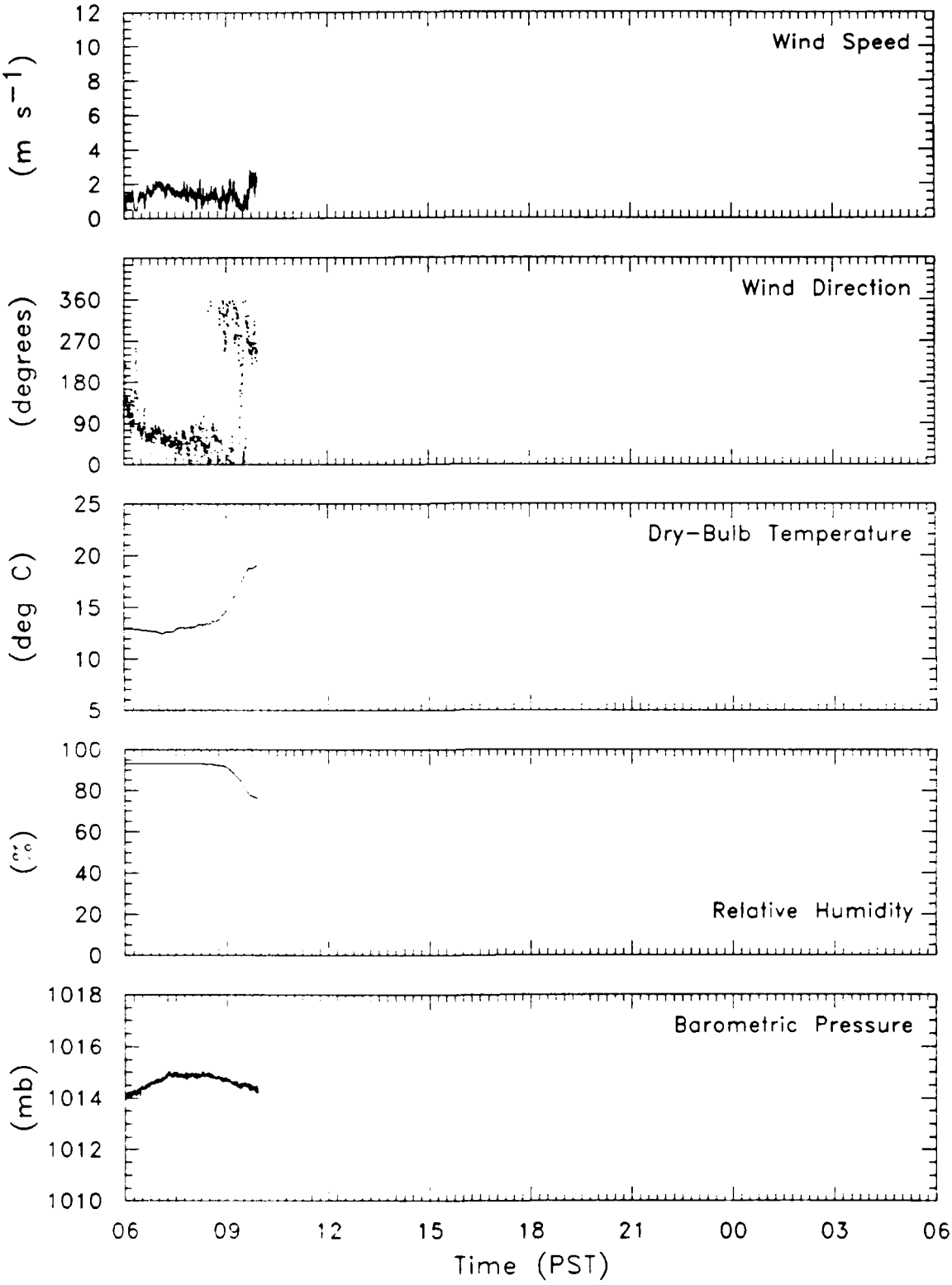
SODAR Triangle, Western Vertex (NEPRF) - 28 Sept 1987



SODAR Triangle, Western Vertex (NEPRF) – 29 Sept 1987

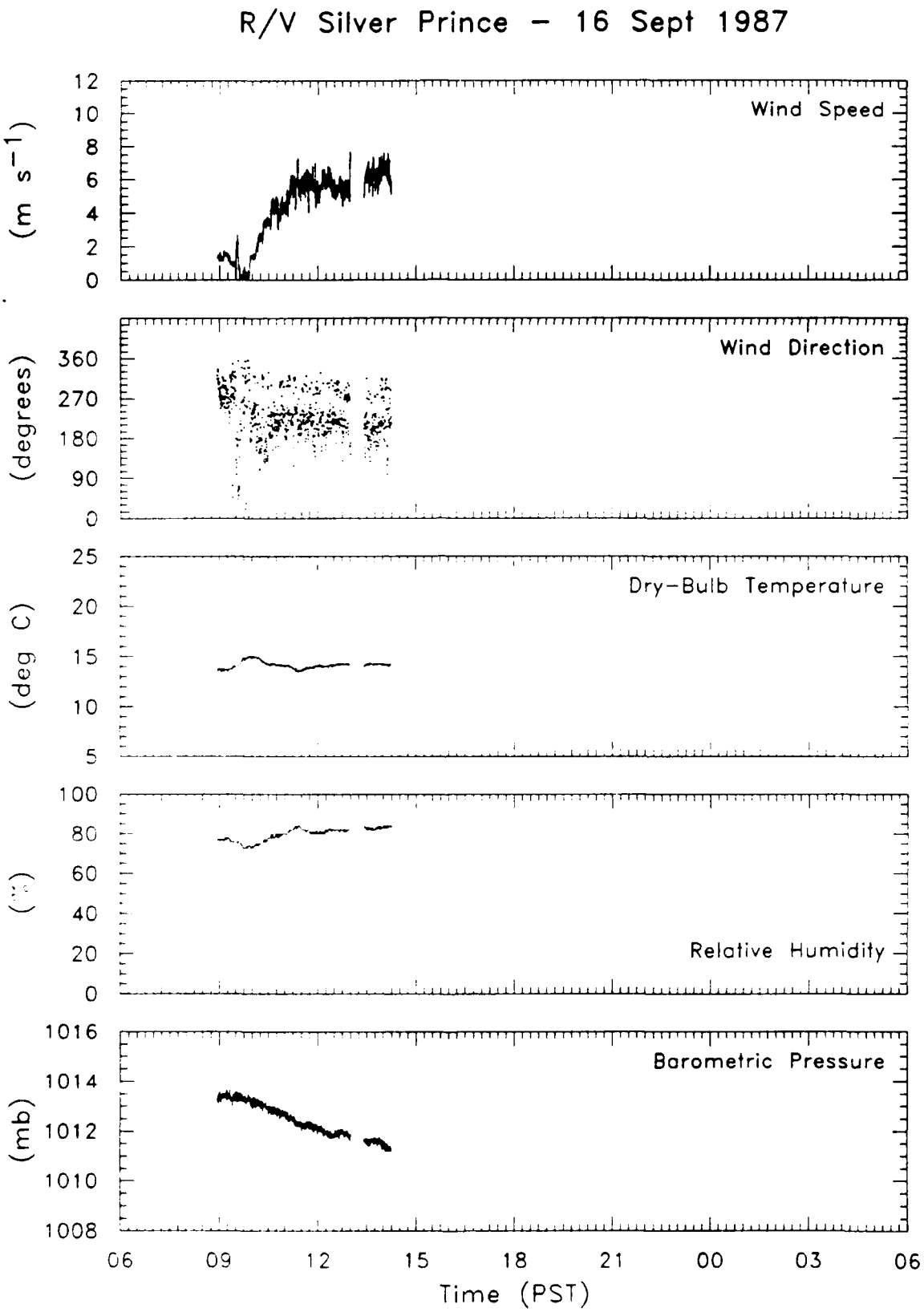


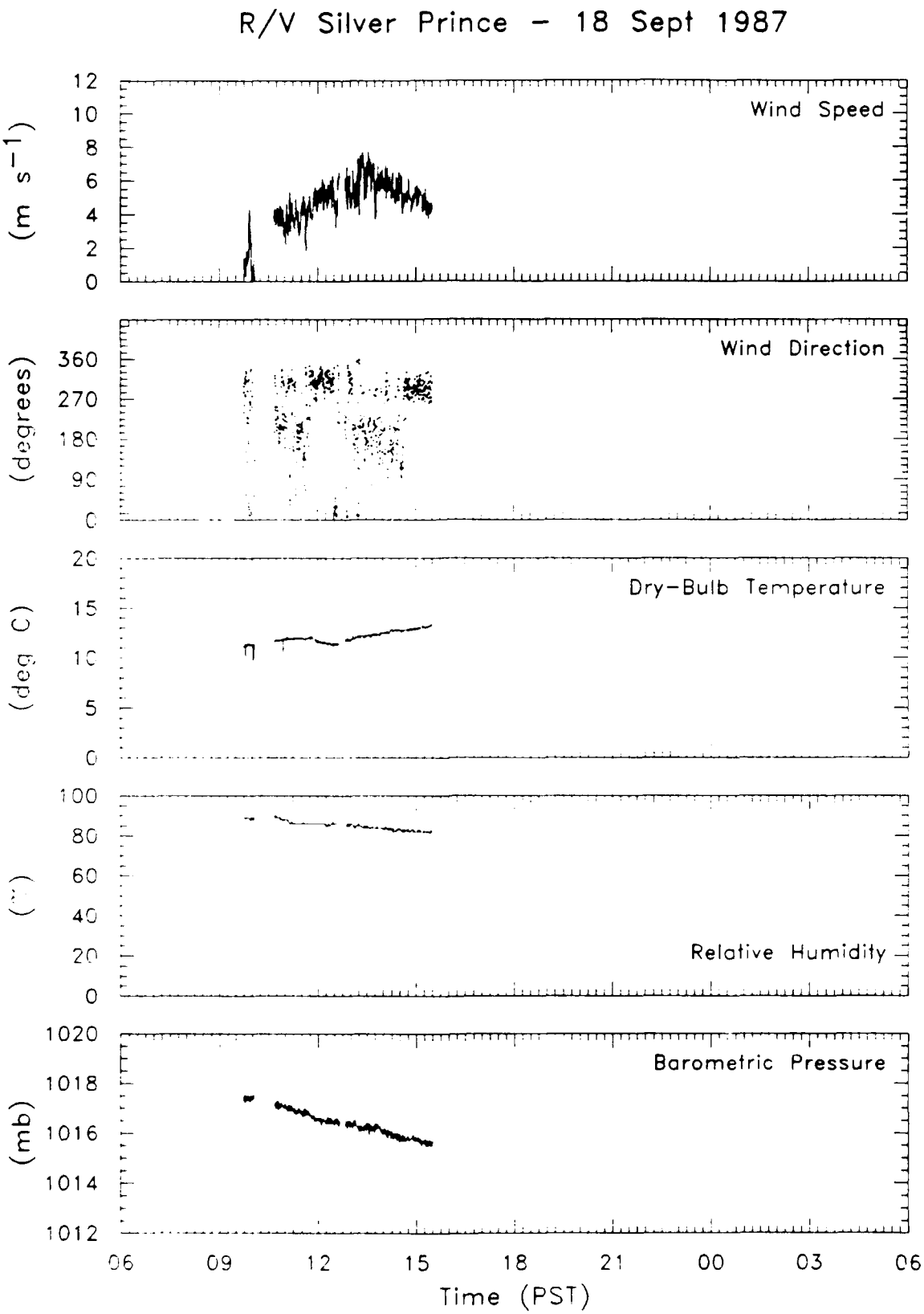
SODAR Triangle, Western Vertex (NEPRF) – 30 Sept 1987

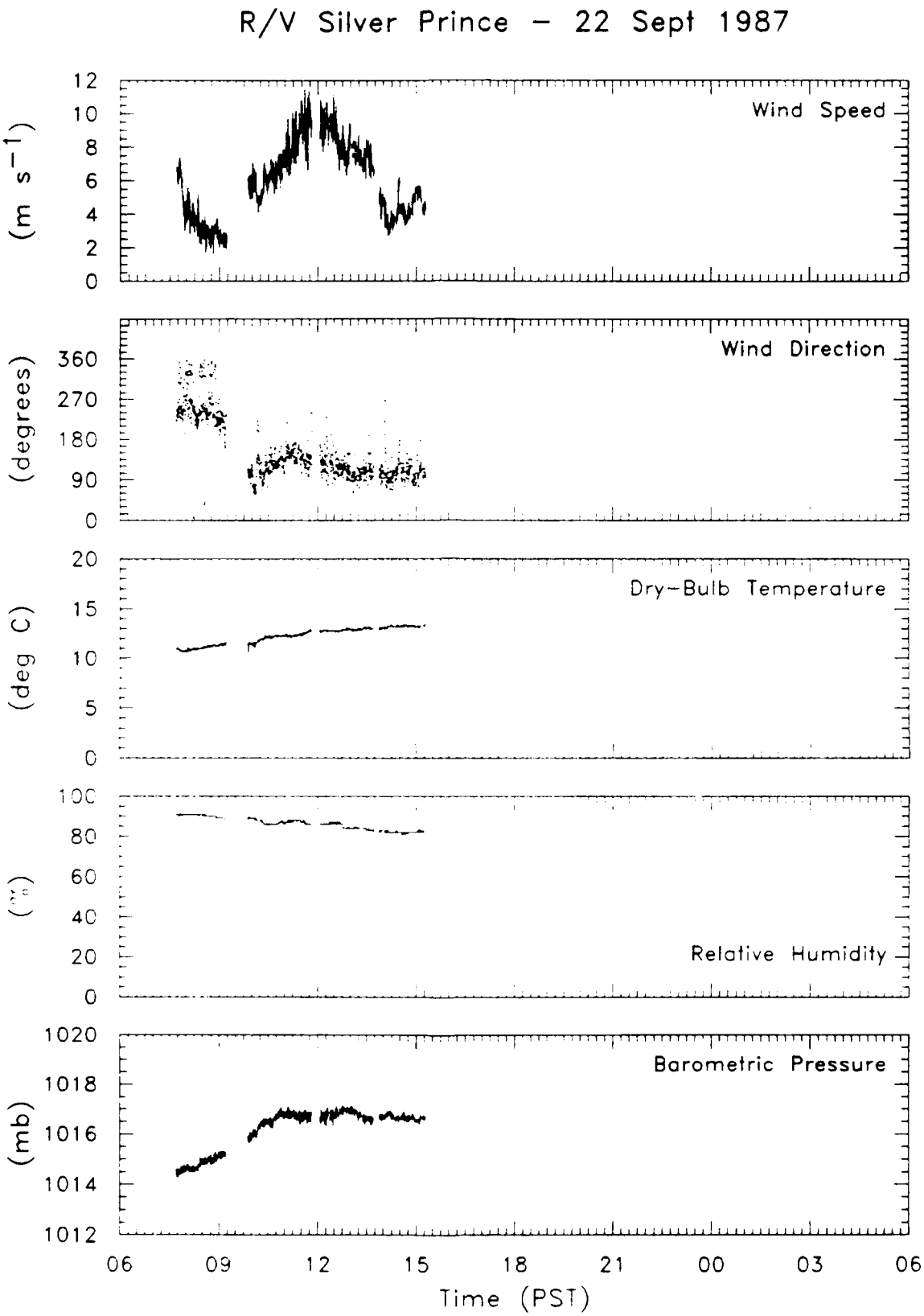


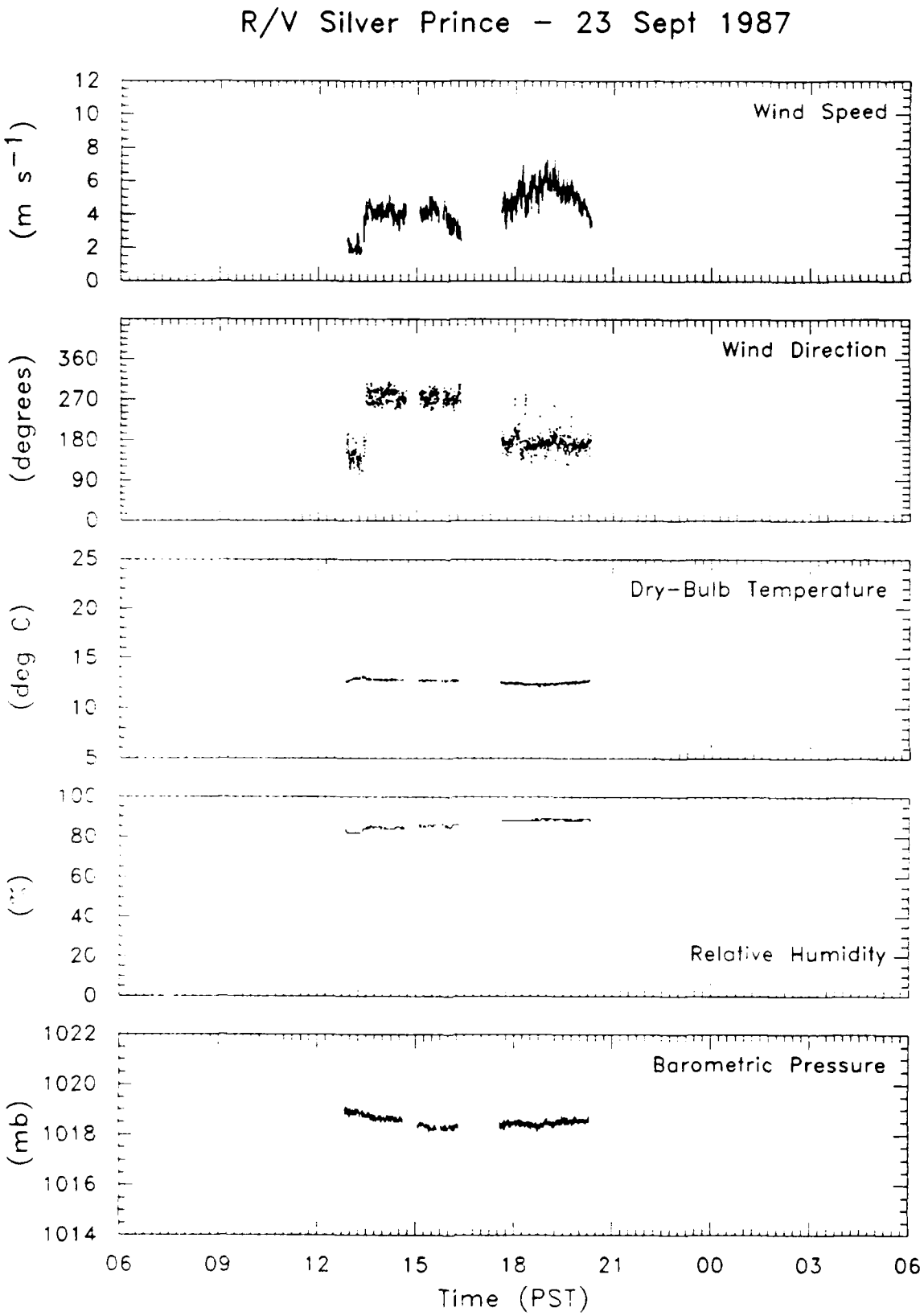
8. TIME SERIES, R/V SILVER PRINCE--NPS

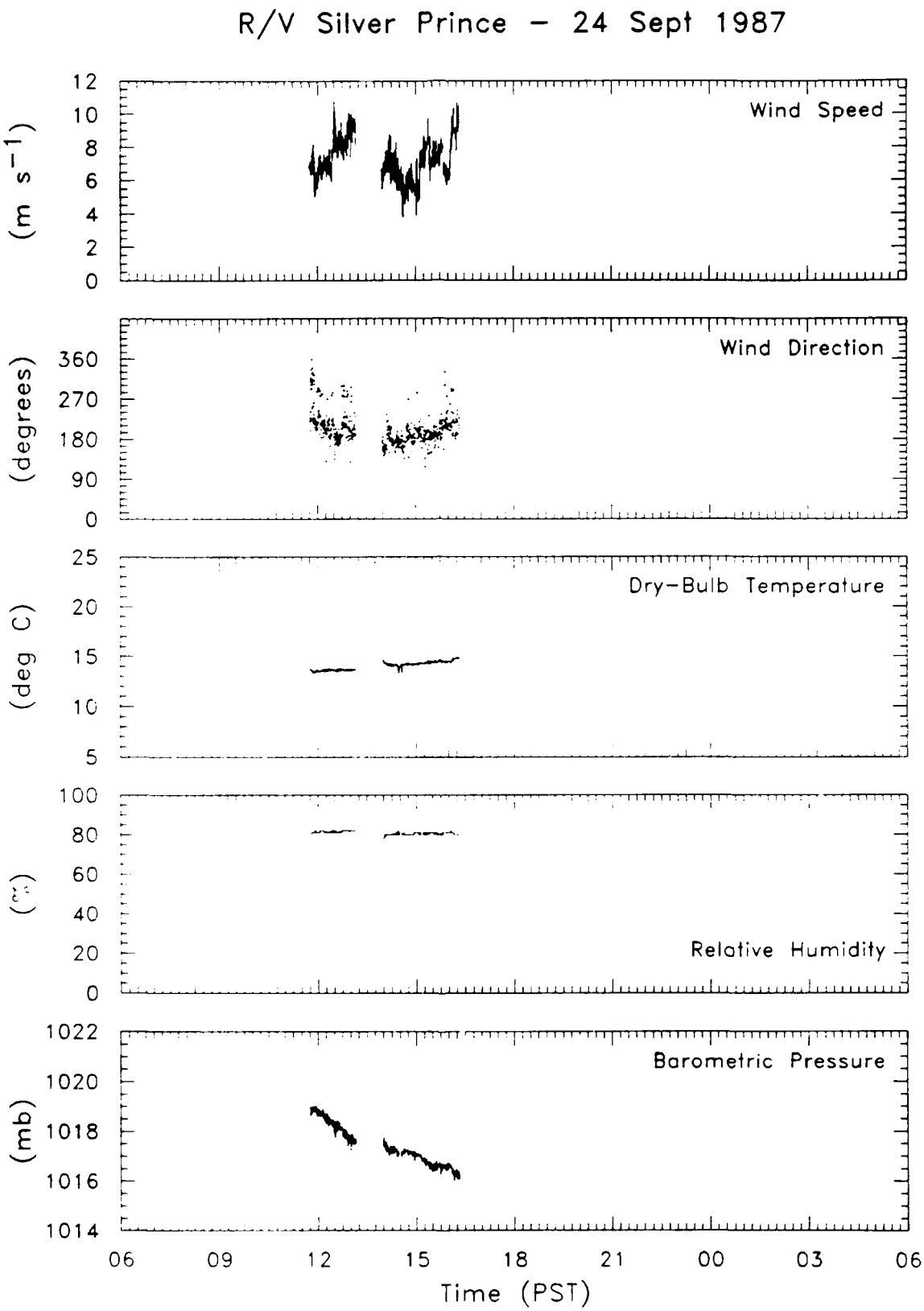
This section presents graphs of surface meteorological data collected by the Naval Postgraduate School aboard the R/V Silver Prince on Monterey Bay (Fig. 1).

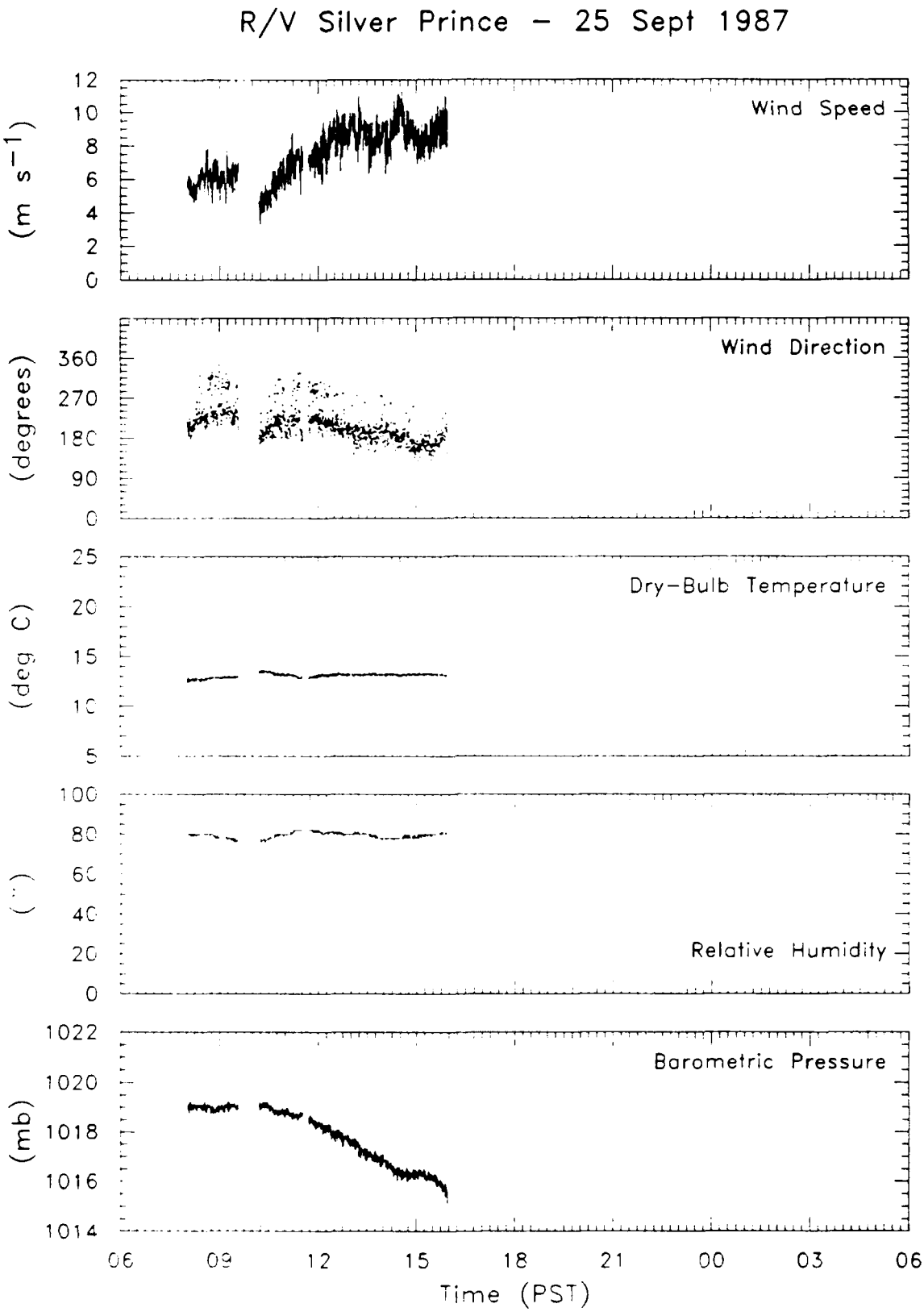

R/V Silver Prince - 16 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
100
80
60
40
20
0
Barometric Pressure
(mb)
1016
1014
1012
1010
1008
06
09
12
15
18
21
00
03
06
Time (PST)

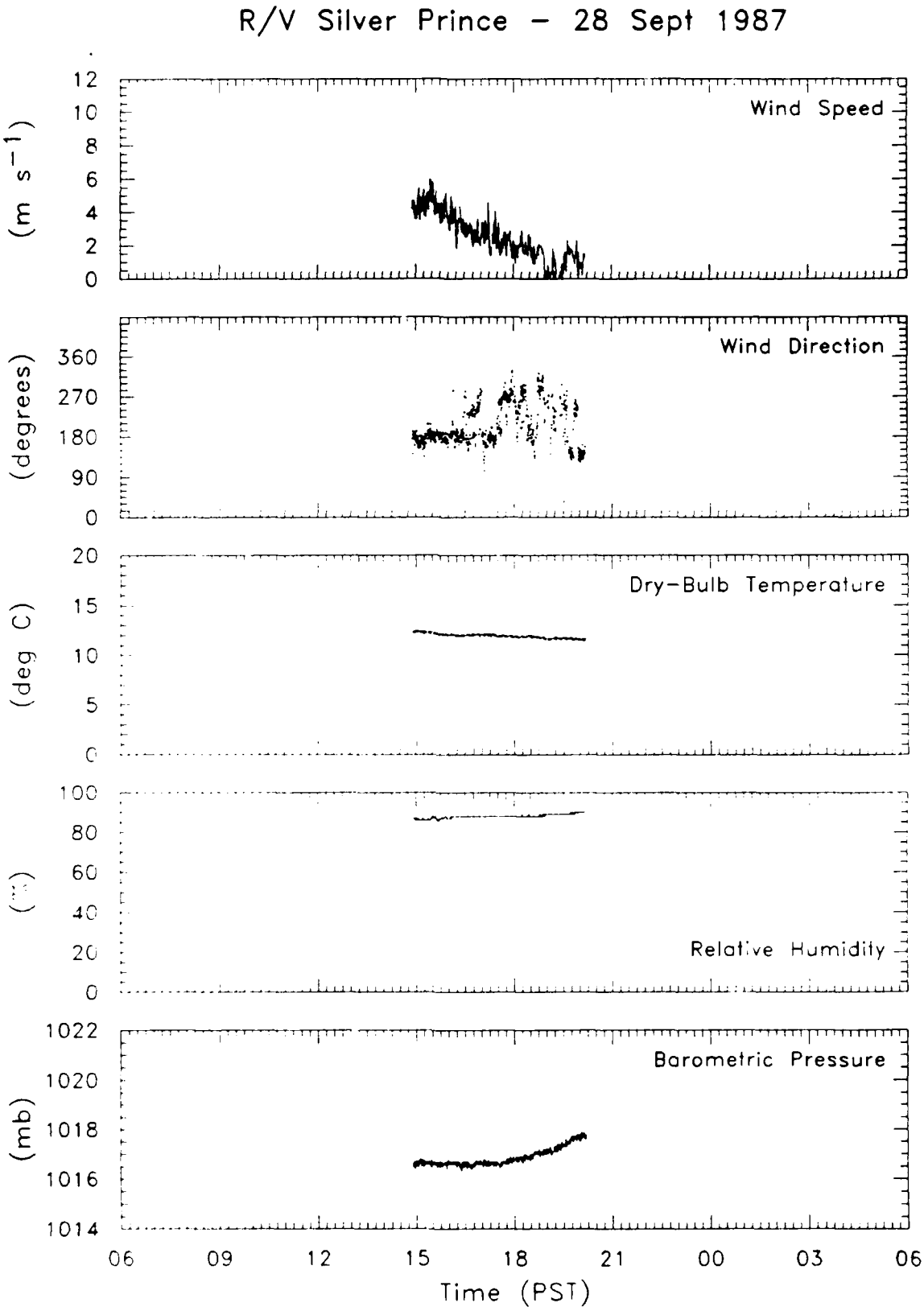

R/V Silver Prince - 18 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
20
15
10
5
0
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1020
1018
1016
1014
1012
06
09
12
15
18
21
00
03
06
Time (PST)

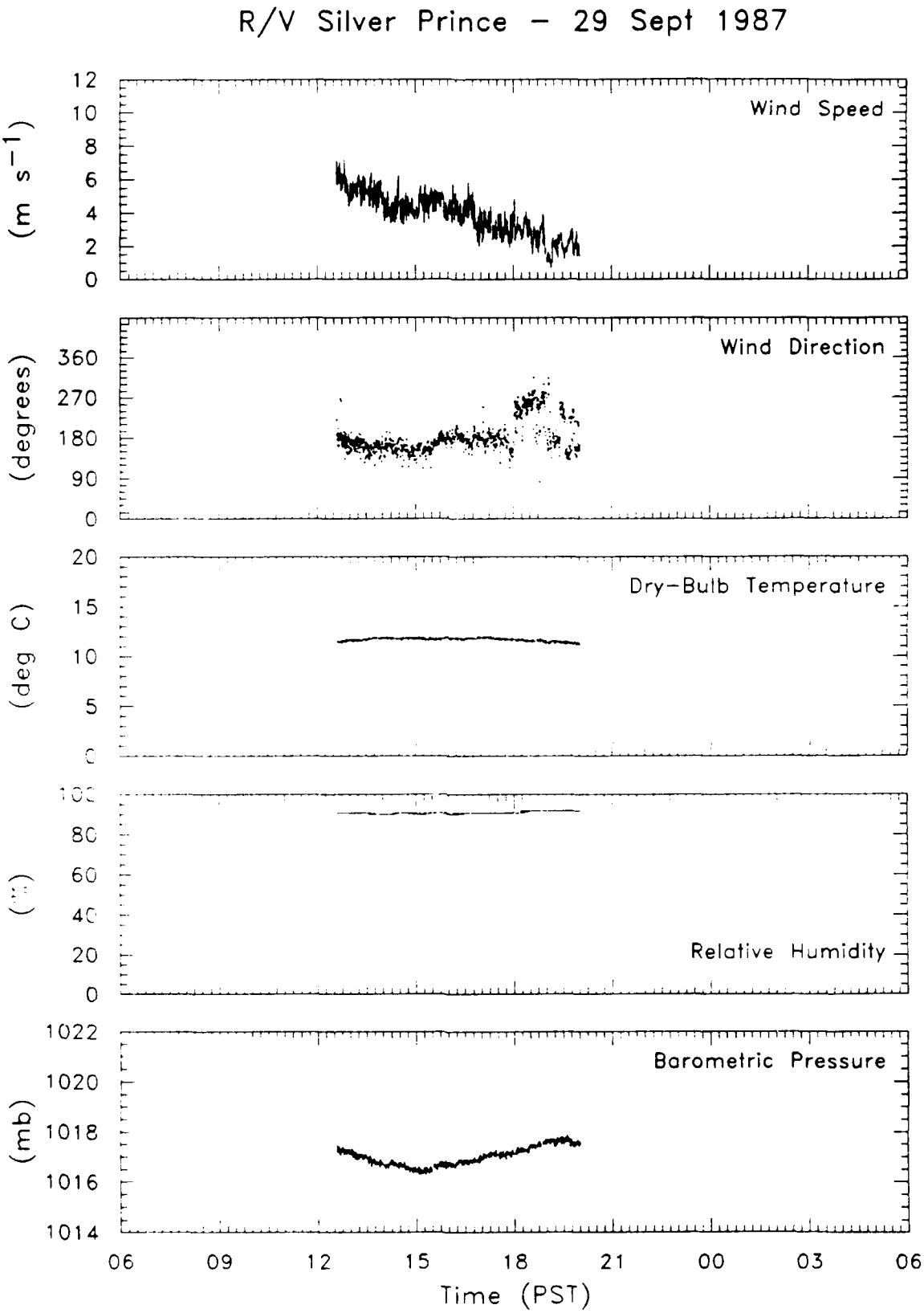

R/V Silver Prince – 22 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
20
15
10
5
0
Relative Humidity
100
80
60
40
20
0
Barometric Pressure
(mb)
1020
1018
1016
1014
1012
06
09
12
15
18
21
00
03
06
Time (PST)


R/V Silver Prince - 23 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
100
80
60
40
20
0
Barometric Pressure
(mb)
1022
1020
1018
1016
1014
06
09
12
15
18
21
00
03
06
Time (PST)


R/V Silver Prince - 24 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1022
1020
1018
1016
1014
06
09
12
15
18
21
00
03
06
Time (PST)

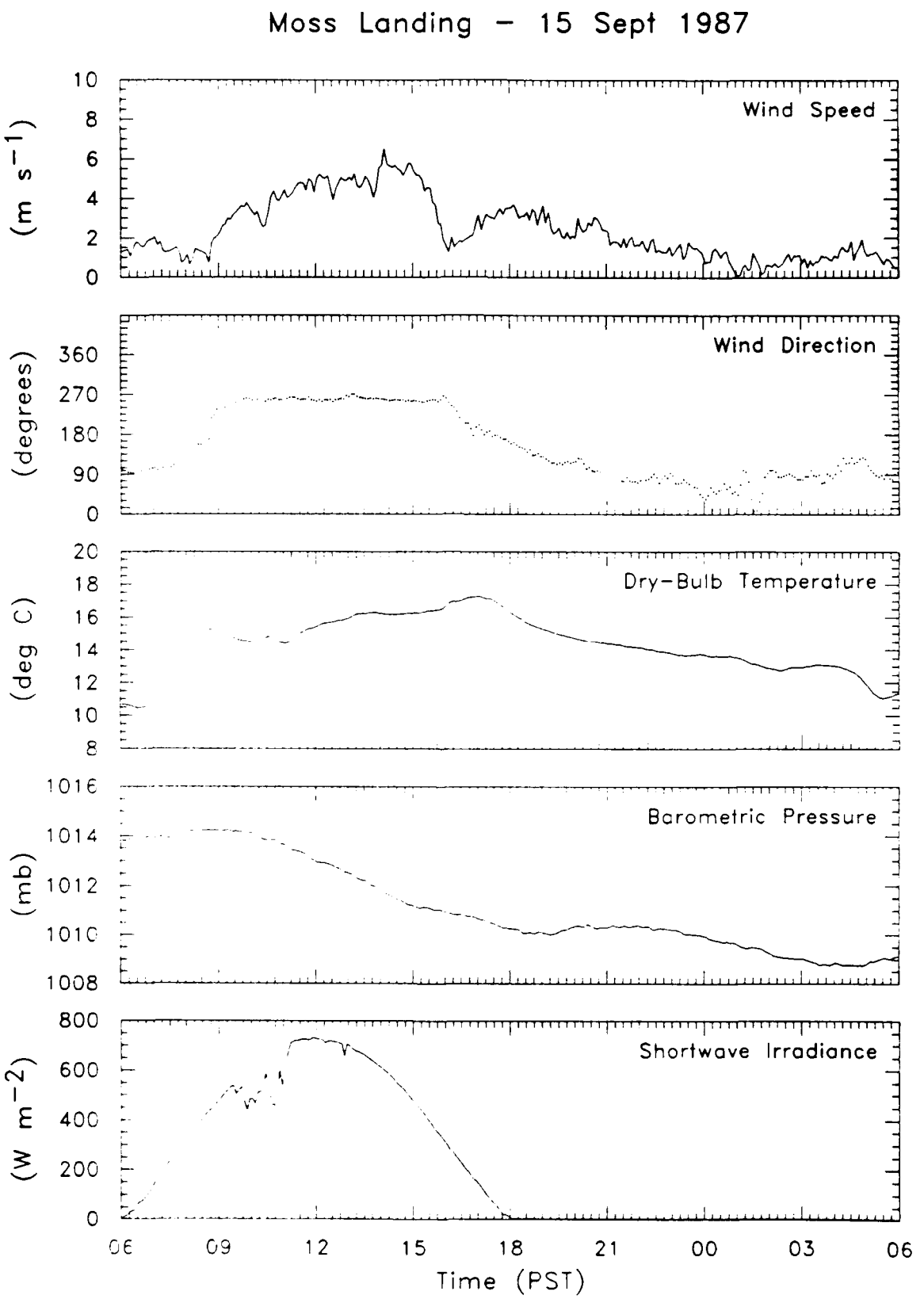

R/V Silver Prince - 25 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
25
20
15
10
5
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1022
1020
1018
1016
1014
06
09
12
15
18
21
00
03
06
Time (PST)

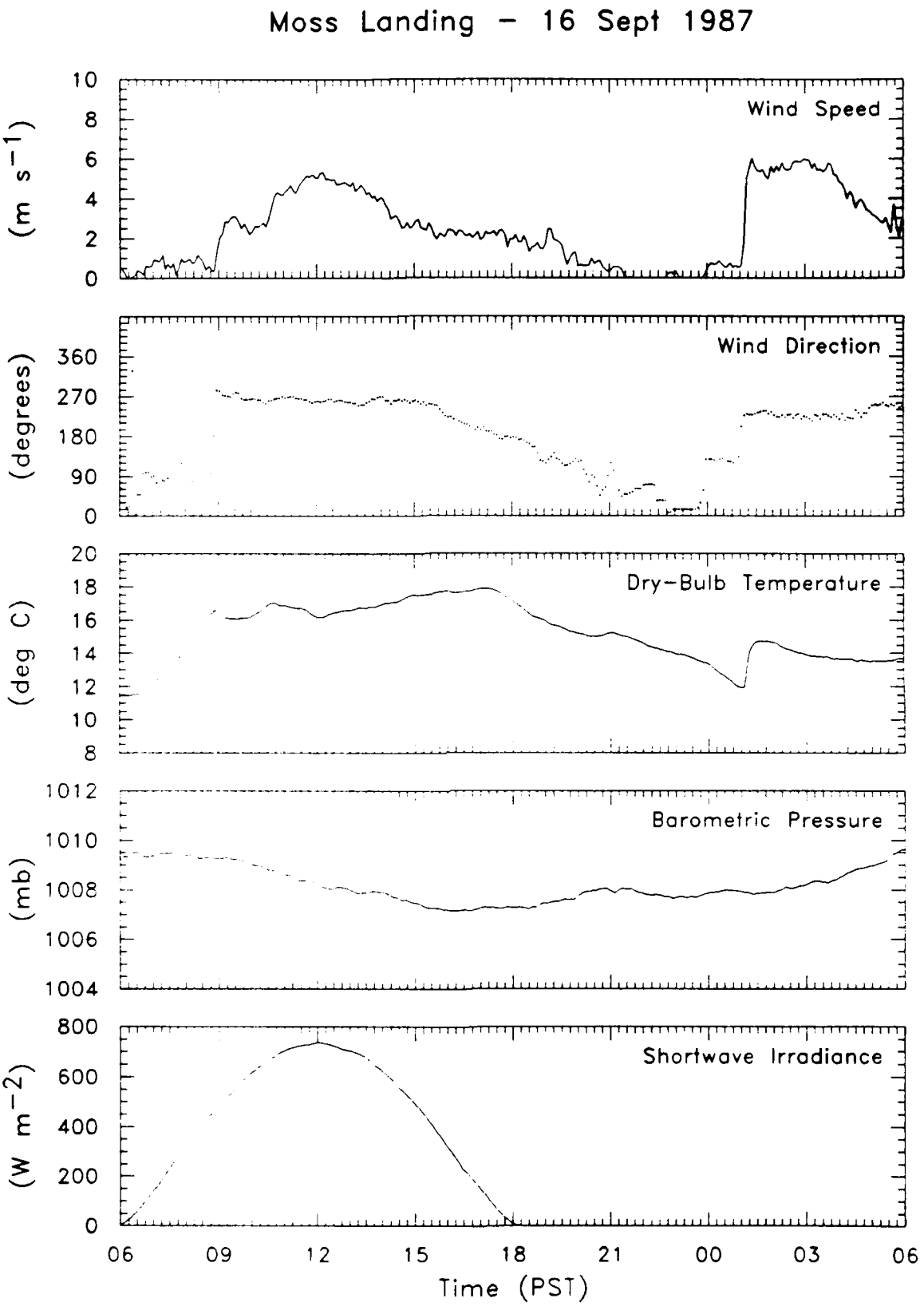

R/V Silver Prince - 28 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
20
15
10
5
0
Relative Humidity
100
80
60
40
20
0
Barometric Pressure
(mb)
1022
1020
1018
1016
1014
06
09
12
15
18
21
00
03
06
Time (PST)

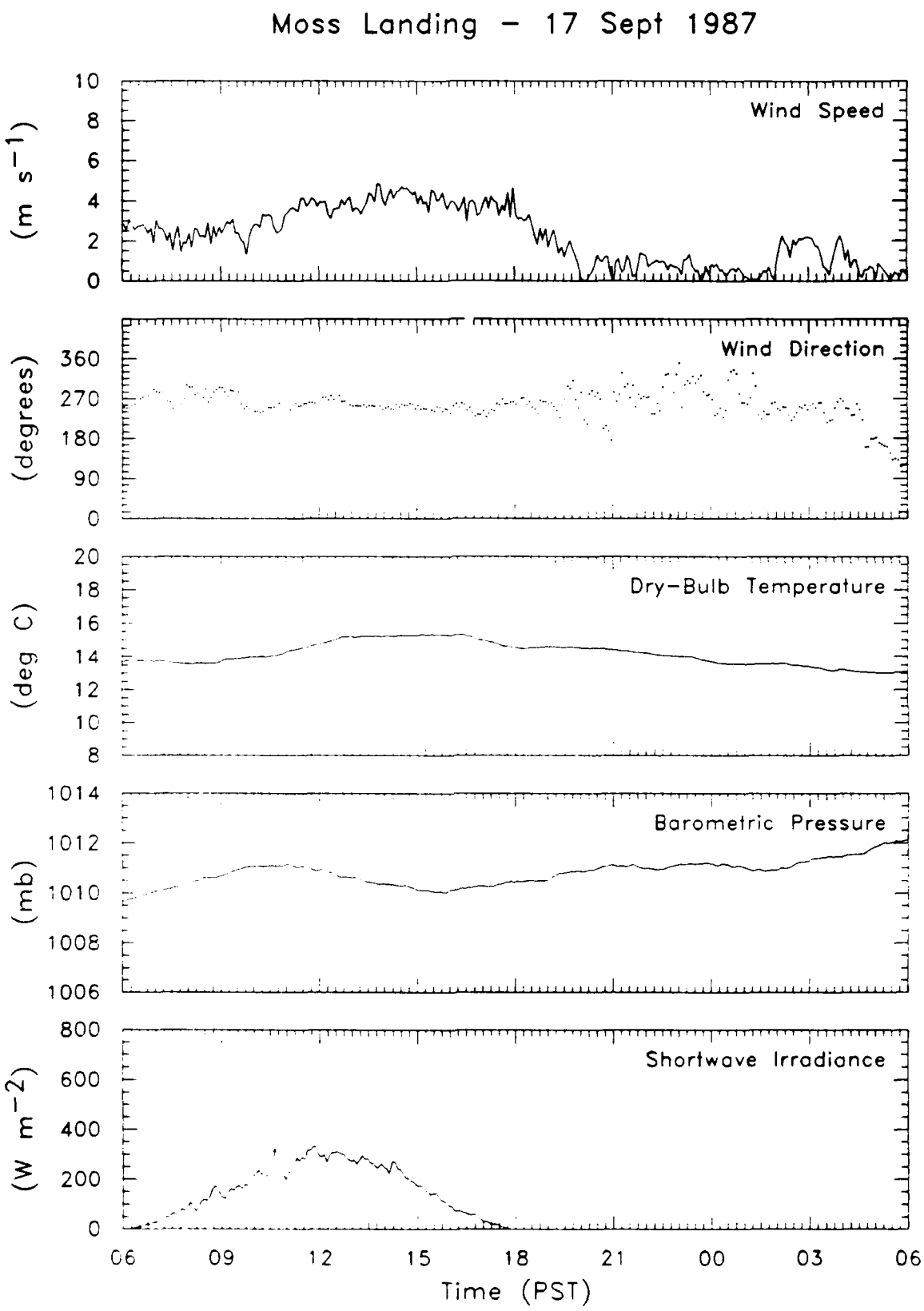

R/V Silver Prince - 29 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
20
15
10
5
0
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1022
1020
1018
1016
1014
06
09
12
15
18
21
00
03
06
Time (PST)

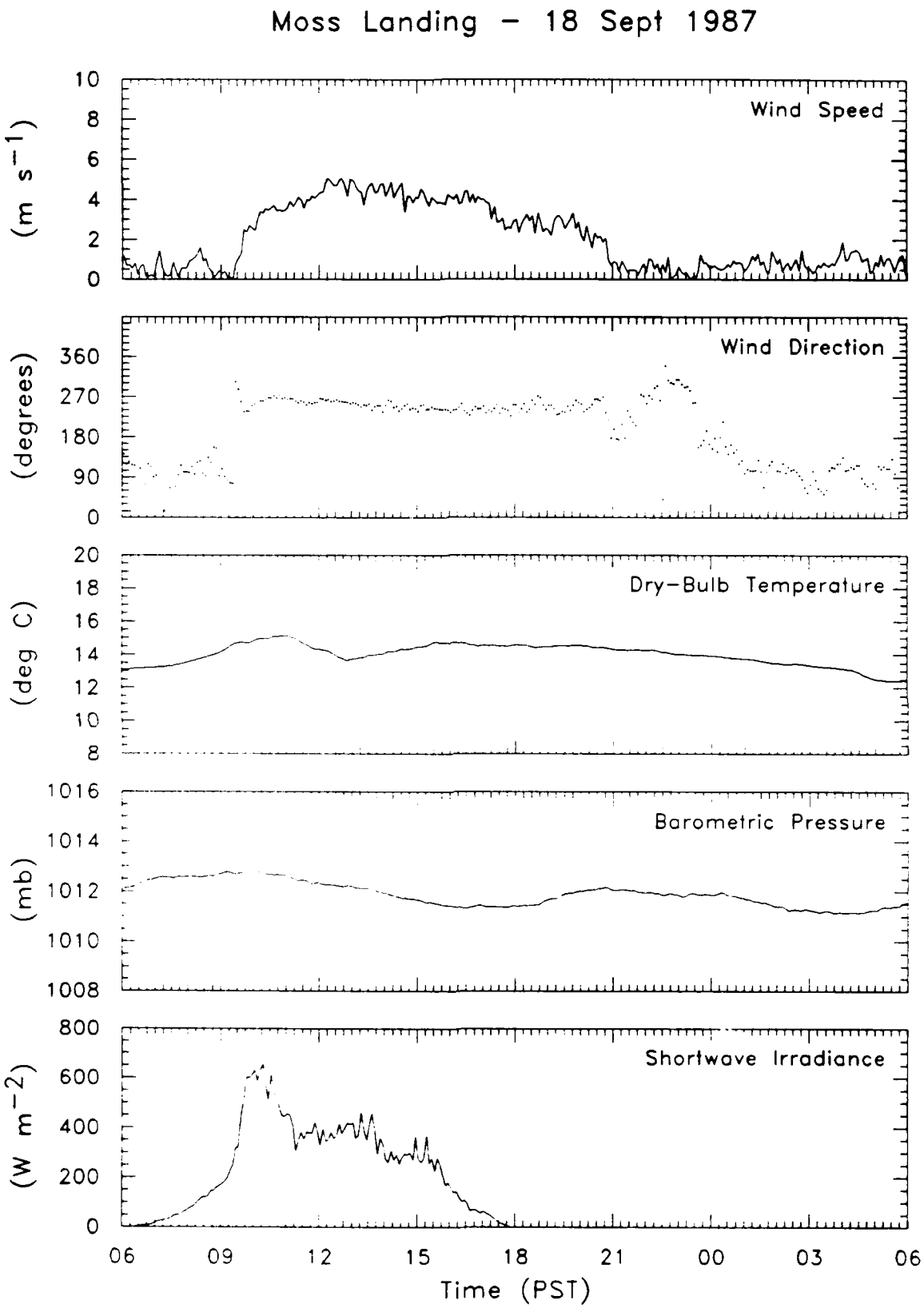
9. TIME SERIES, MOSS LANDING MARINE LABORATORIES

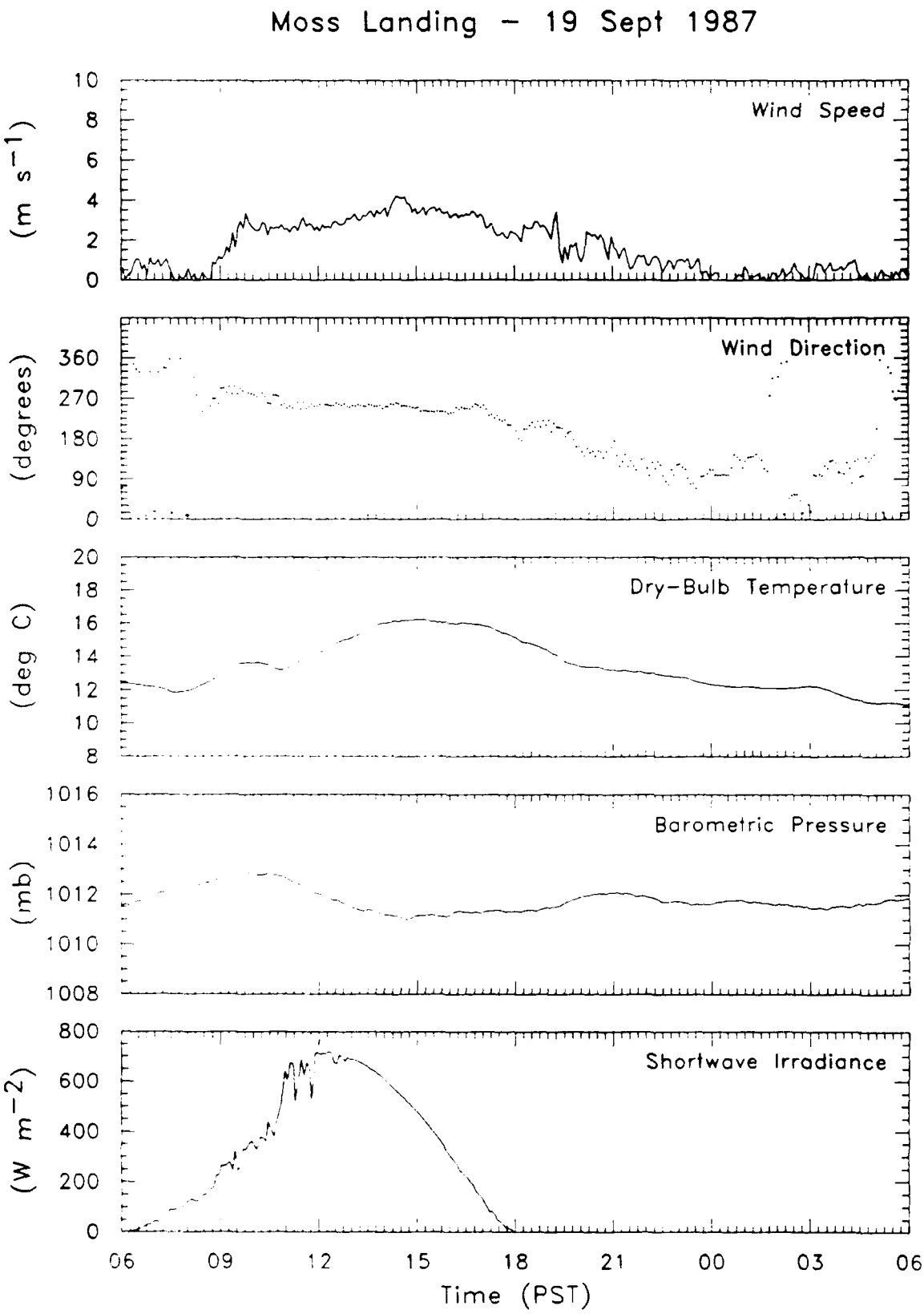
This section presents graphs of data collected routinely by the Moss Landing Marine Laboratories during LASBEX (Fig. 1). Relative humidities were unavailable, but these data contain shortwave irradiance measurements at the surface.

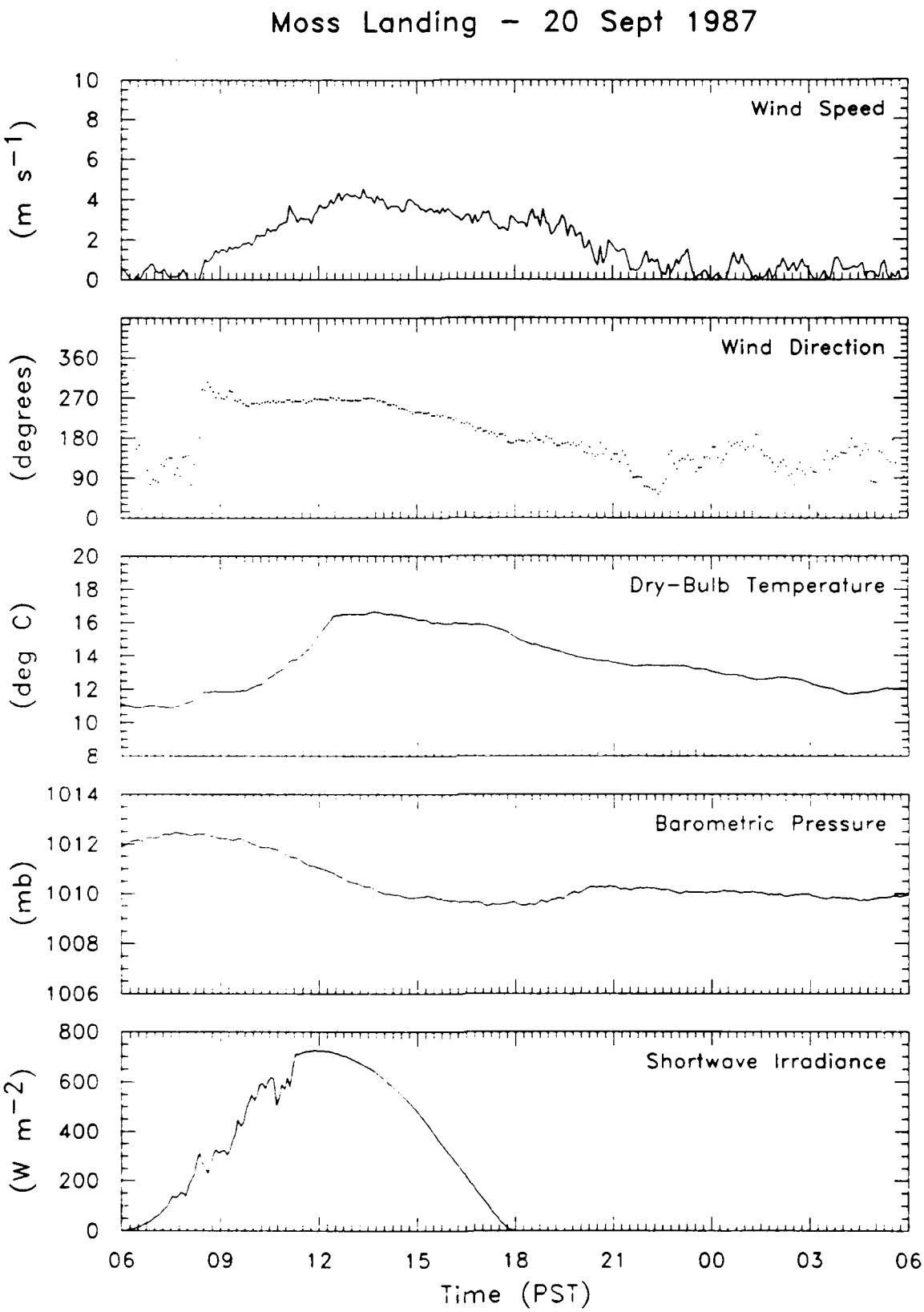

Moss Landing - 15 Sept 1987
Wind Speed
(m s^{-1})
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
20
18
16
14
12
10
8
Barometric Pressure
(mb)
1016
1014
1012
1010
1008
Shortwave Irradiance
(W m^{-2})
800
600
400
200
0
06
09
12
15
18
21
00
03
06
Time (PST)

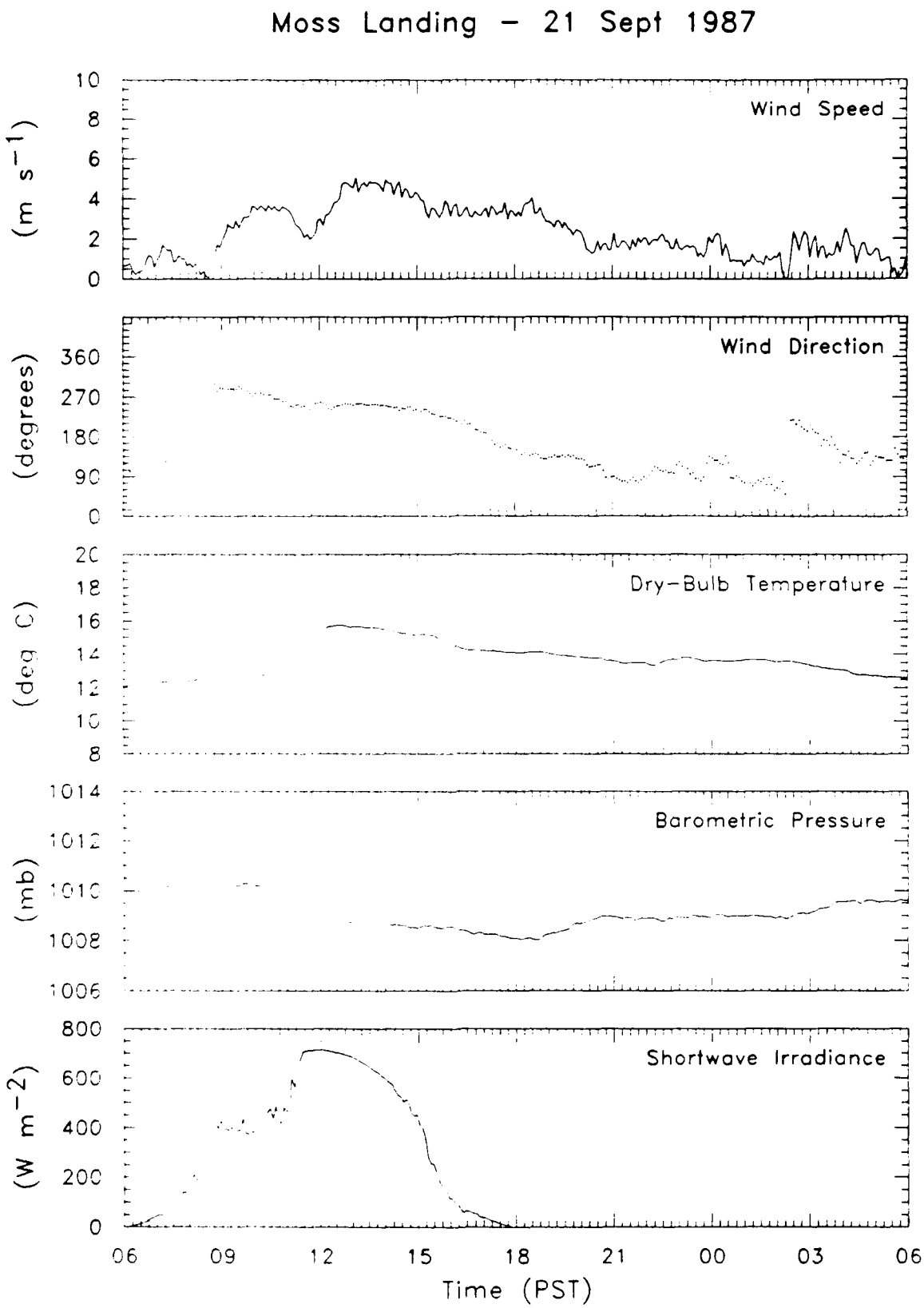

Moss Landing - 16 Sept 1987
Wind Speed
(m s^{-1})
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
20
18
16
14
12
10
8
Barometric Pressure
(mb)
1012
1010
1008
1006
1004
Shortwave Irradiance
(W m^{-2})
800
600
400
200
0
06
09
12
15
18
21
00
03
06
Time (PST)

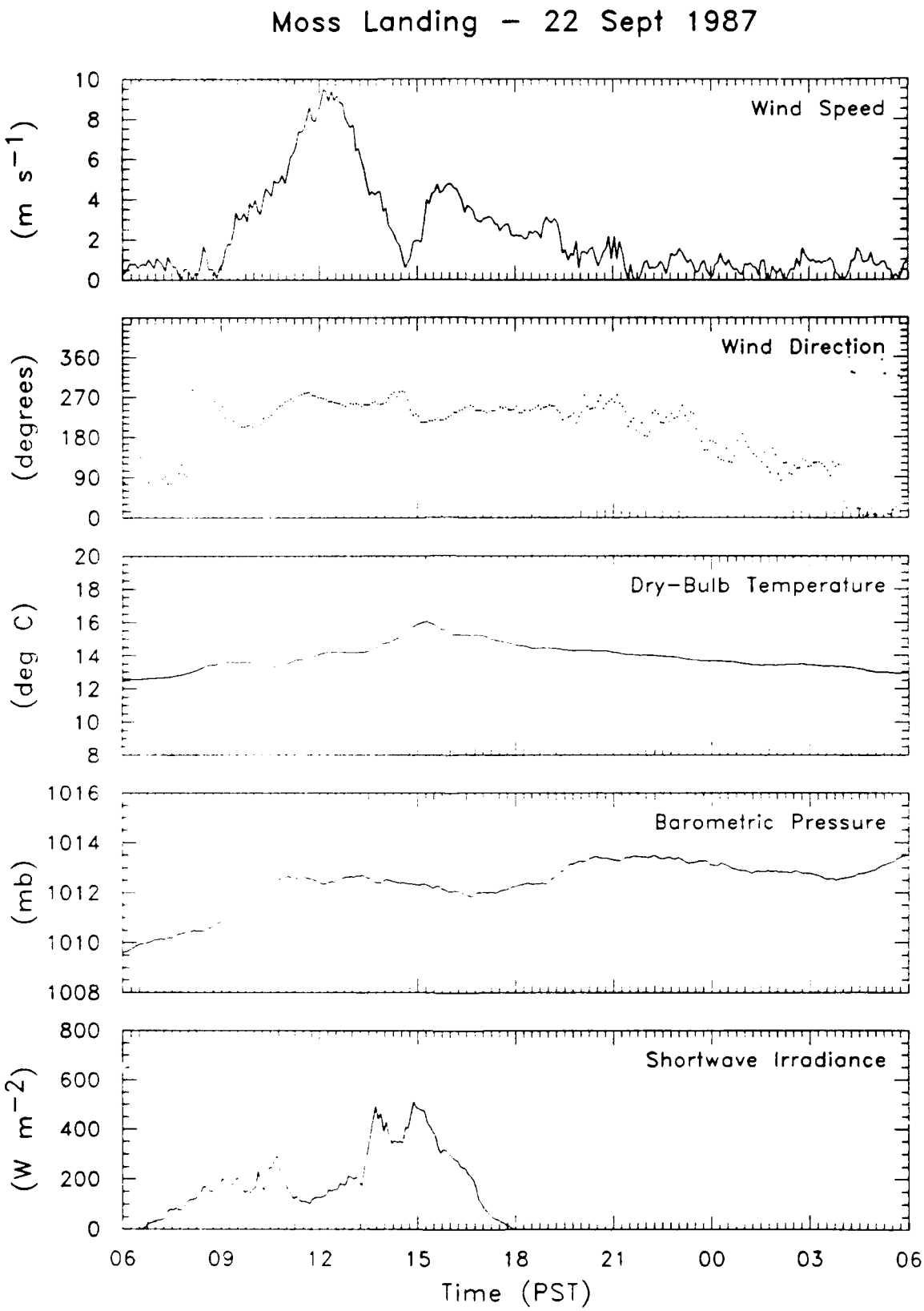

Moss Landing - 17 Sept 1987
Wind Speed
(m s^{-1})
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
20
18
16
14
12
10
8
Barometric Pressure
(mb)
1014
1012
1010
1008
1006
Shortwave Irradiance
(W m^{-2})
800
600
400
200
0
06
09
12
15
18
21
00
03
06
Time (PST)

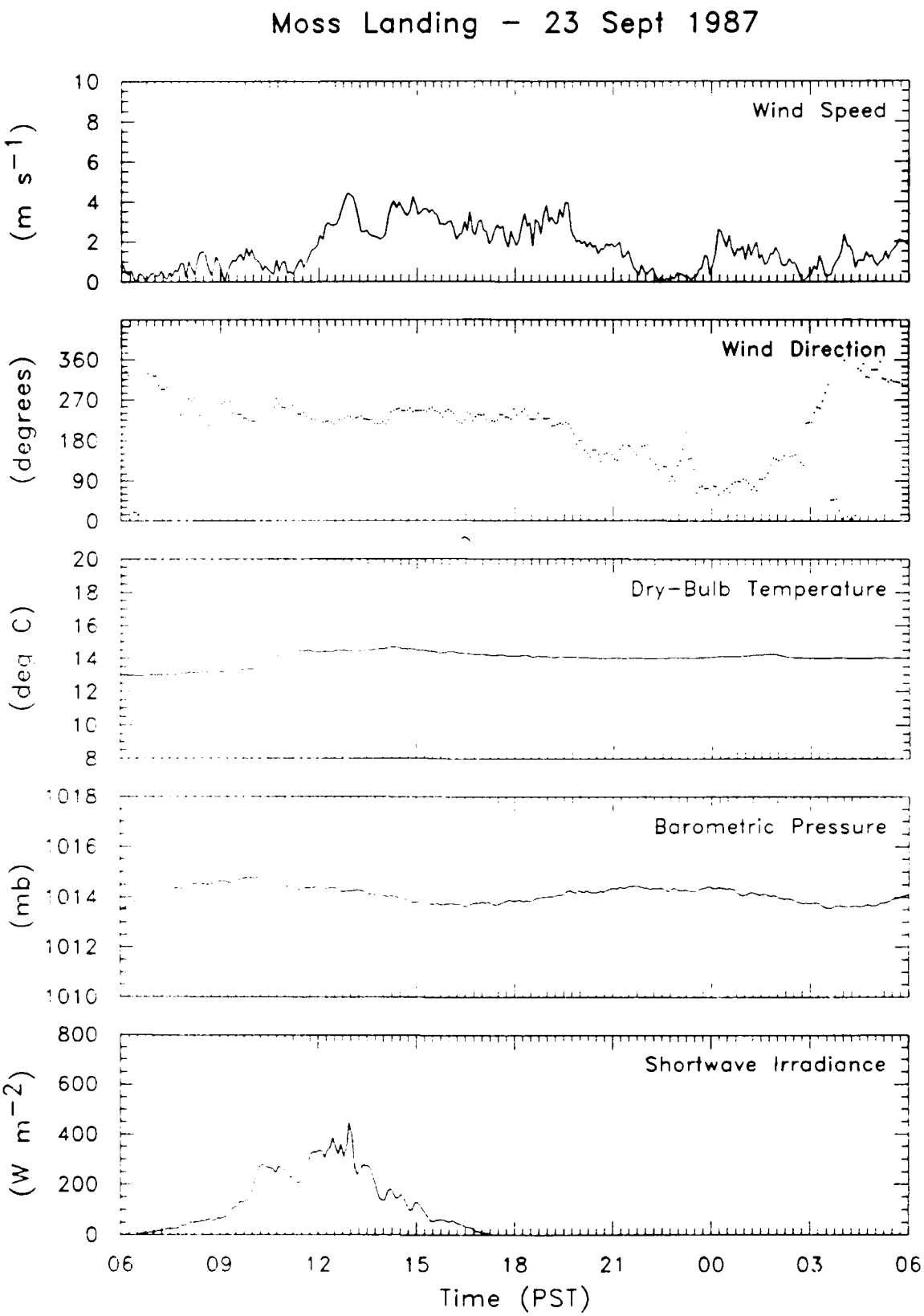

Moss Landing - 18 Sept 1987
Wind Speed
(m s^{-1})
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
20
18
16
14
12
10
8
Barometric Pressure
(mb)
1016
1014
1012
1010
1008
Shortwave Irradiance
(W m^{-2})
800
600
400
200
0
06
09
12
15
18
21
00
03
06
Time (PST)

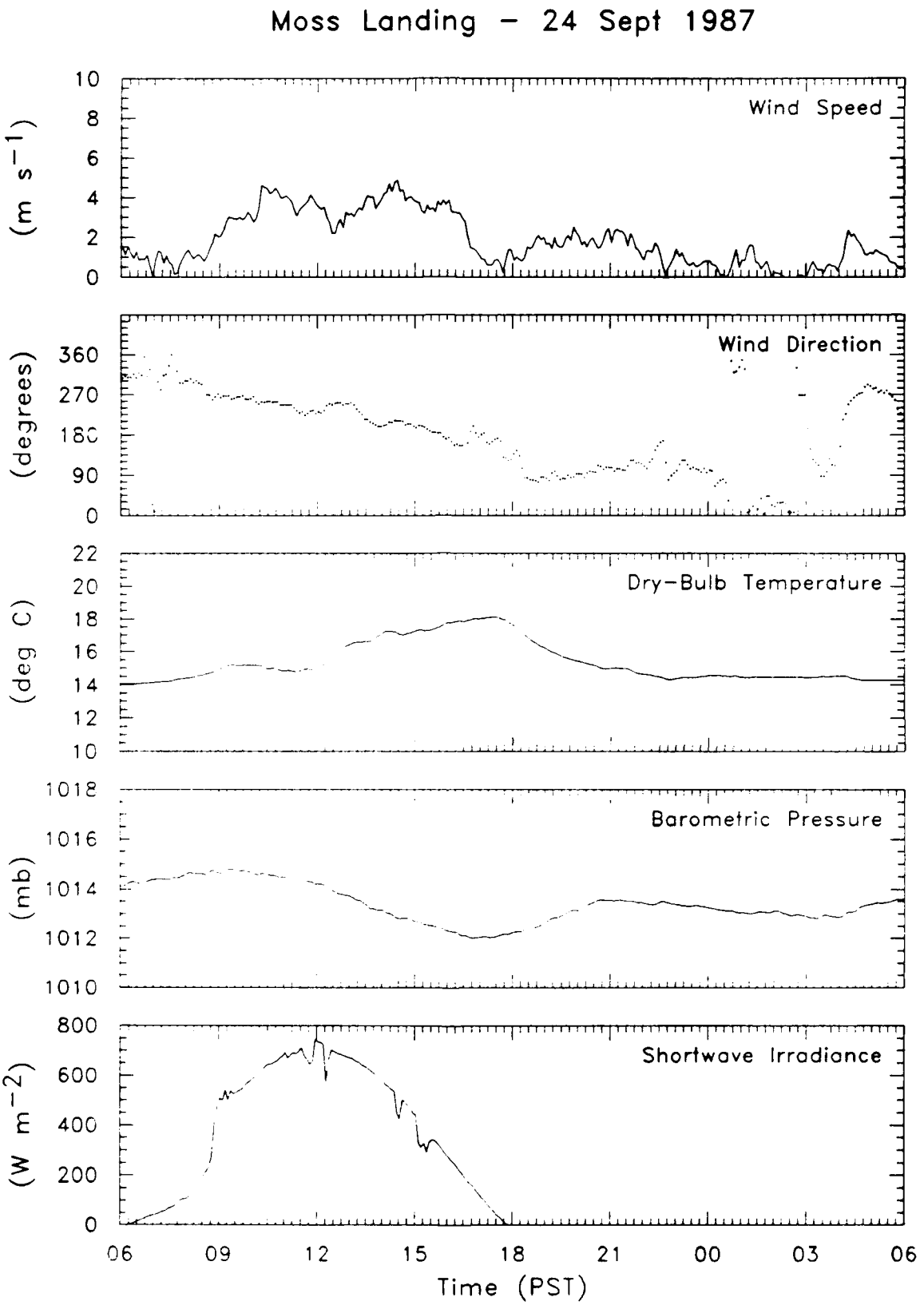

Moss Landing - 19 Sept 1987
Wind Speed
(m s^{-1})
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
20
18
16
14
12
10
8
Barometric Pressure
(mb)
1016
1014
1012
1010
1008
Shortwave Irradiance
(W m^{-2})
800
600
400
200
0
06
09
12
15
18
21
00
03
06
Time (PST)

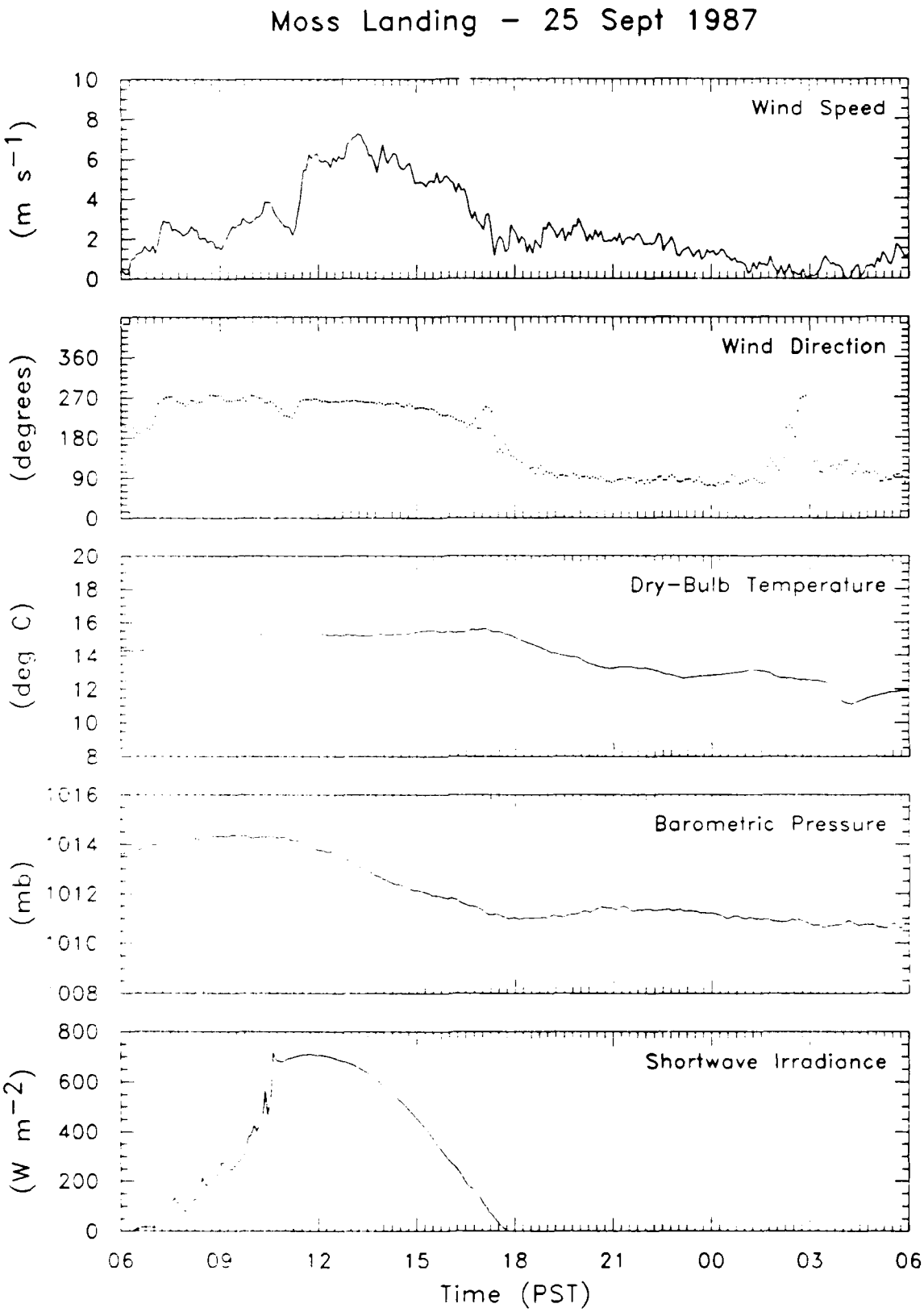

Moss Landing - 20 Sept 1987
Wind Speed
(m s^{-1})
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
20
18
16
14
12
10
8
Barometric Pressure
(mb)
1014
1012
1010
1008
1006
Shortwave Irradiance
(W m^{-2})
800
600
400
200
0
06
09
12
15
18
21
00
03
06
Time (PST)

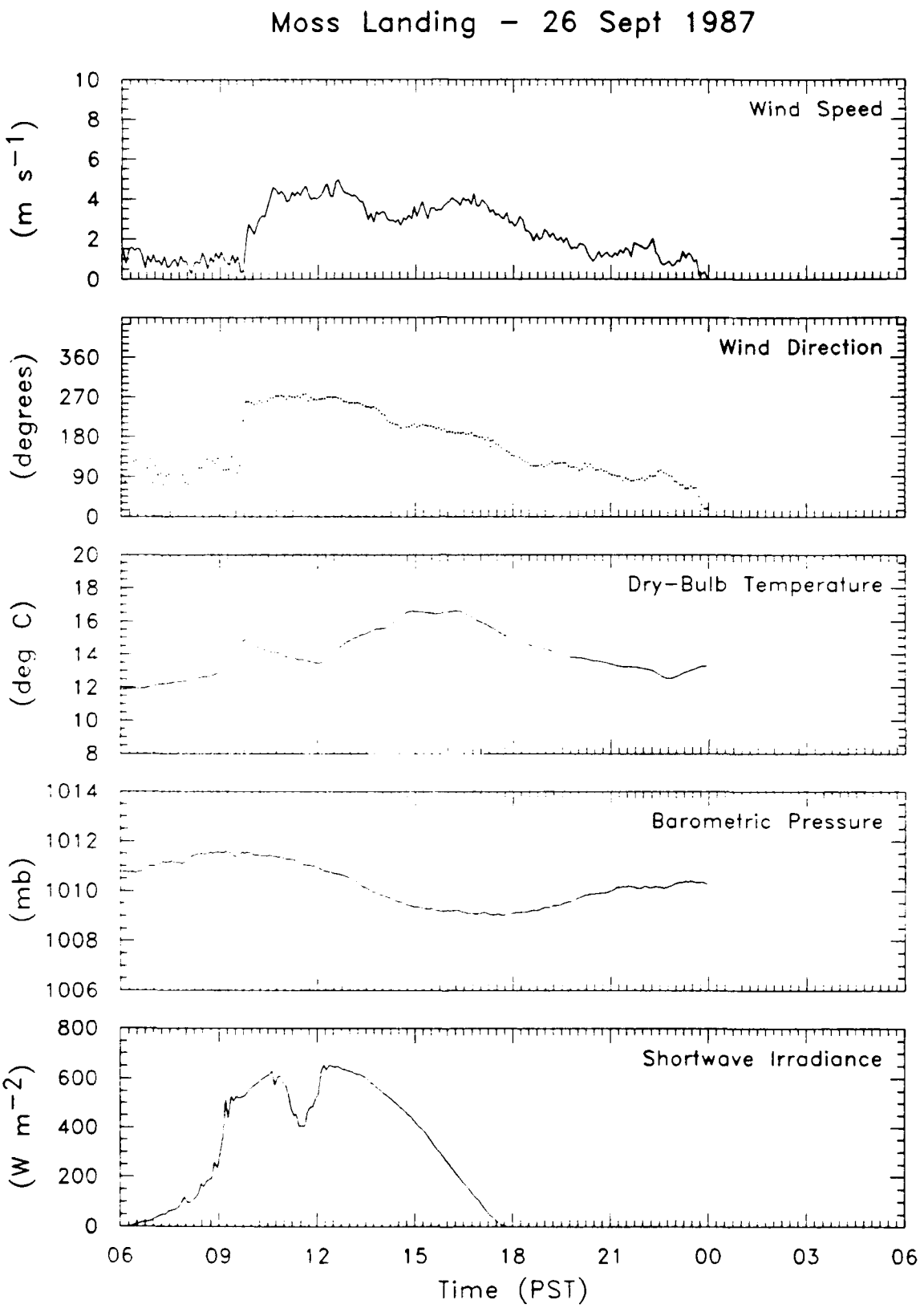

Moss Landing - 21 Sept 1987
Wind Speed
(m s^{-1})
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
20
18
16
14
12
10
8
Barometric Pressure
(mb)
1014
1012
1010
1008
1006
Shortwave Irradiance
(W m^{-2})
800
600
400
200
0
06
09
12
15
18
21
00
03
06
Time (PST)

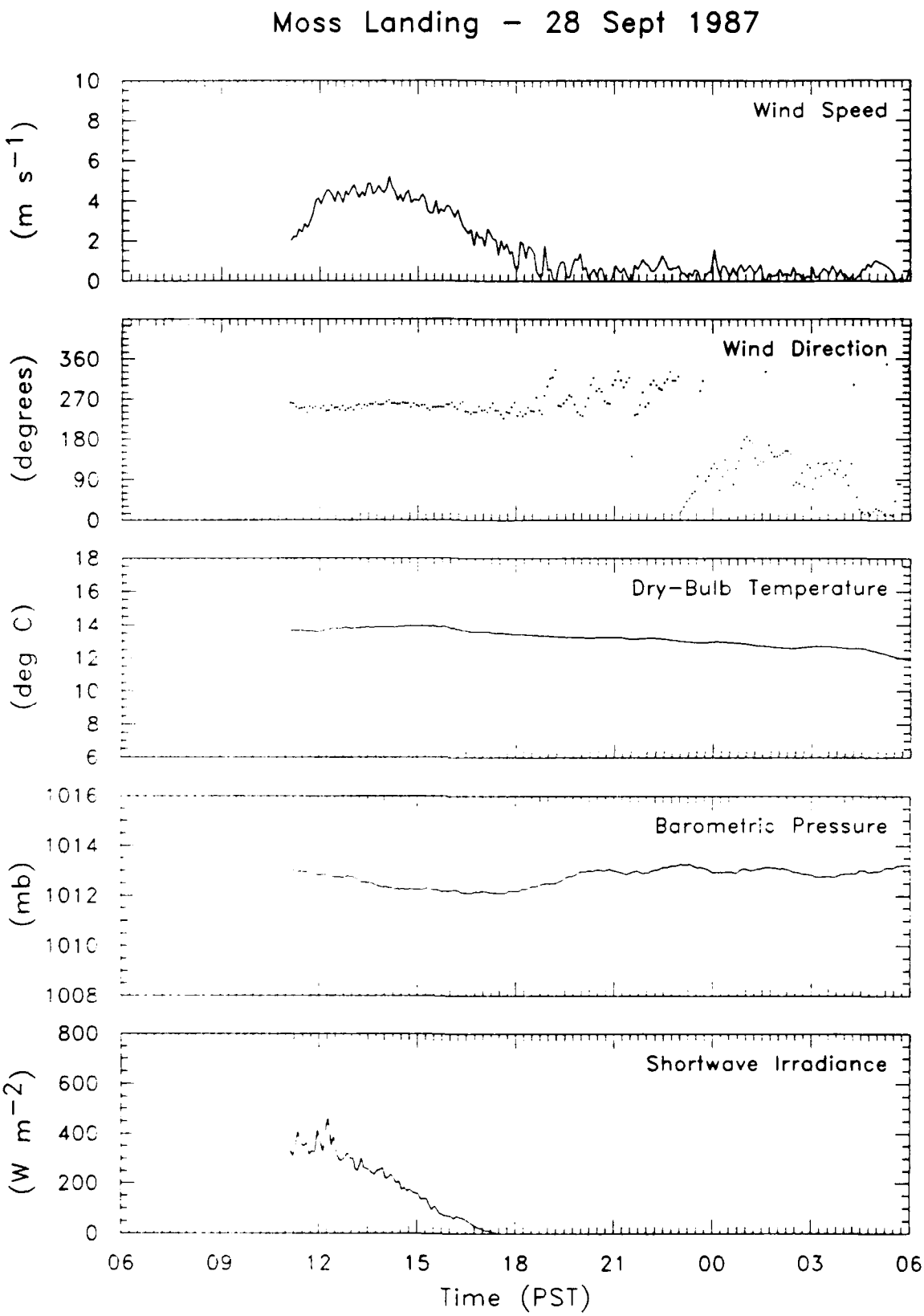

Moss Landing - 22 Sept 1987
Wind Speed
(m s^{-1})
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
20
18
16
14
12
10
8
Barometric Pressure
(mb)
1016
1014
1012
1010
1008
Shortwave Irradiance
(W m^{-2})
800
600
400
200
0
06
09
12
15
18
21
00
03
06
Time (PST)

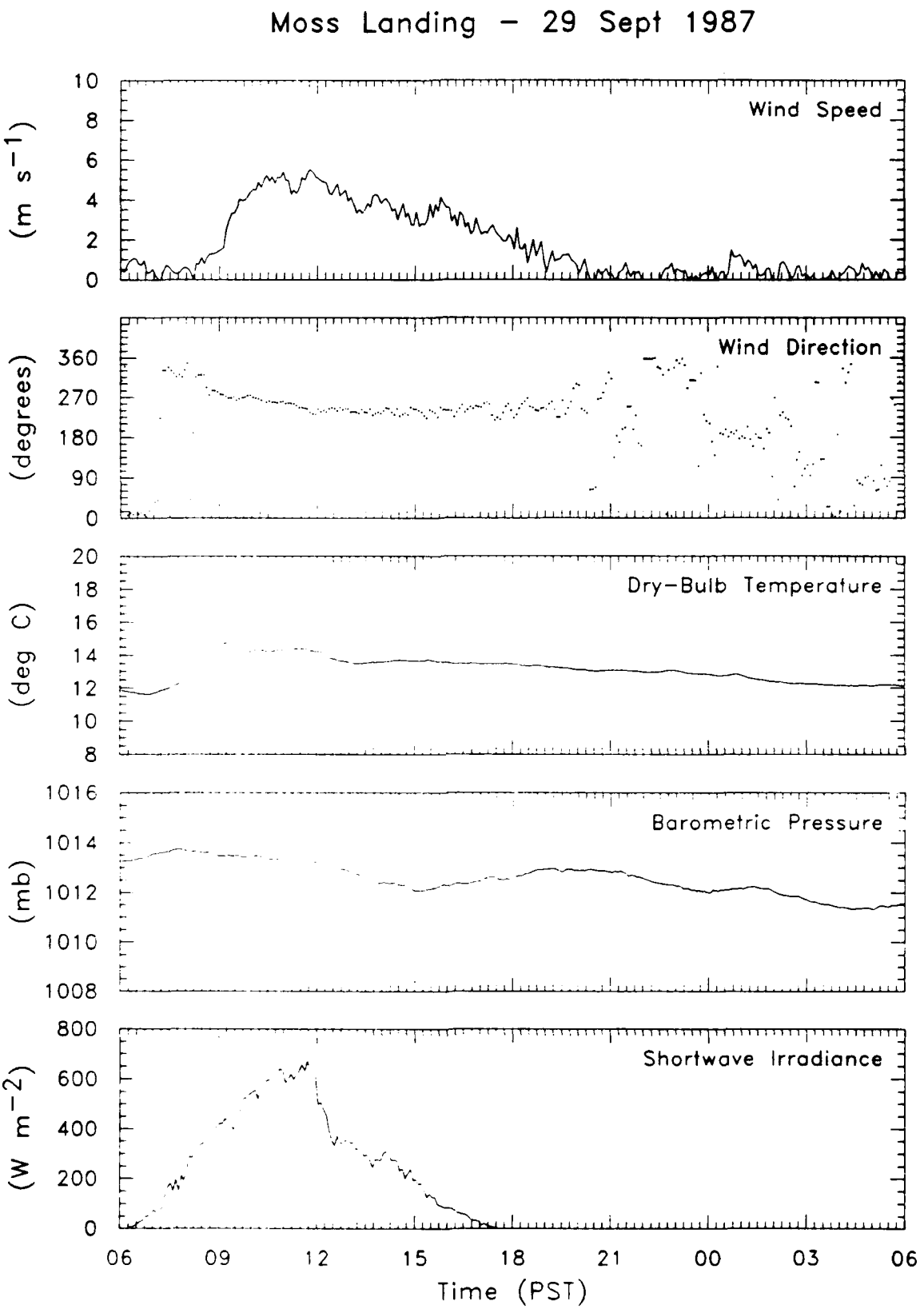

Moss Landing - 23 Sept 1987
Wind Speed
(m s^{-1})
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
20
18
16
14
12
10
8
Barometric Pressure
(mb)
1018
1016
1014
1012
1010
Shortwave Irradiance
(W m^{-2})
800
600
400
200
0
06
09
12
15
18
21
00
03
06
Time (PST)

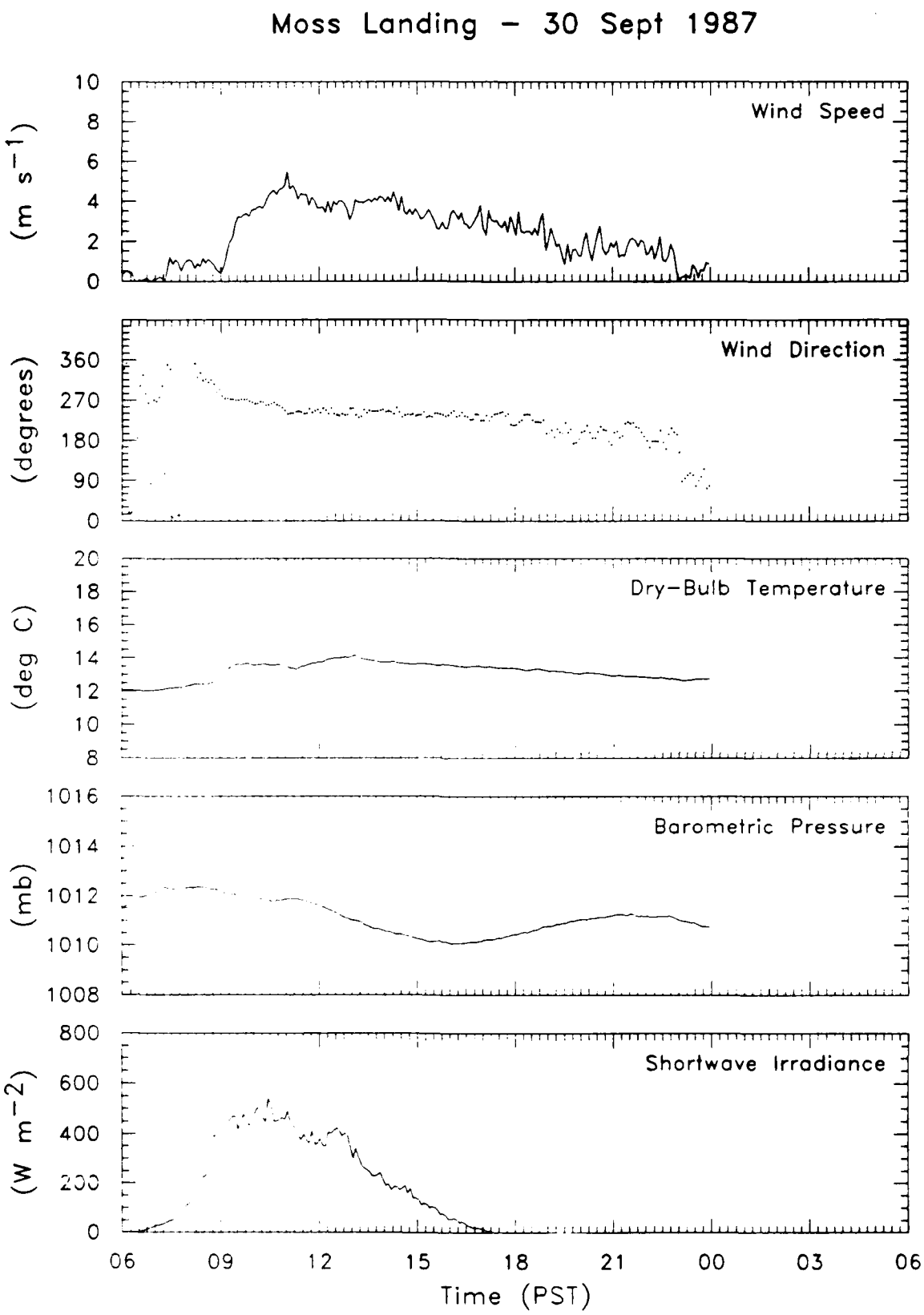

Moss Landing - 24 Sept 1987
Wind Speed
(m s^{-1})
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
22
20
18
16
14
12
10
Barometric Pressure
(mb)
1018
1016
1014
1012
1010
Shortwave Irradiance
(W m^{-2})
800
600
400
200
0
06
09
12
15
18
21
00
03
06
Time (PST)


Moss Landing - 25 Sept 1987
Wind Speed
(m s^{-1})
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
20
18
16
14
12
10
8
Barometric Pressure
(mb)
1016
1014
1012
1010
1008
Shortwave Irradiance
(W m^{-2})
800
600
400
200
0
06
09
12
15
18
21
00
03
06
Time (PST)


Moss Landing - 26 Sept 1987
Wind Speed
(m s^{-1})
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
20
18
16
14
12
10
8
Barometric Pressure
(mb)
1014
1012
1010
1008
1006
Shortwave Irradiance
(W m^{-2})
800
600
400
200
0
06
09
12
15
18
21
00
03
06
Time (PST)


Moss Landing - 28 Sept 1987
Wind Speed
(m s^{-1})
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
18
16
14
12
10
8
6
Barometric Pressure
(mb)
1016
1014
1012
1010
1008
Shortwave Irradiance
(W m^{-2})
800
600
400
200
0
06
09
12
15
18
21
00
03
06
Time (PST)

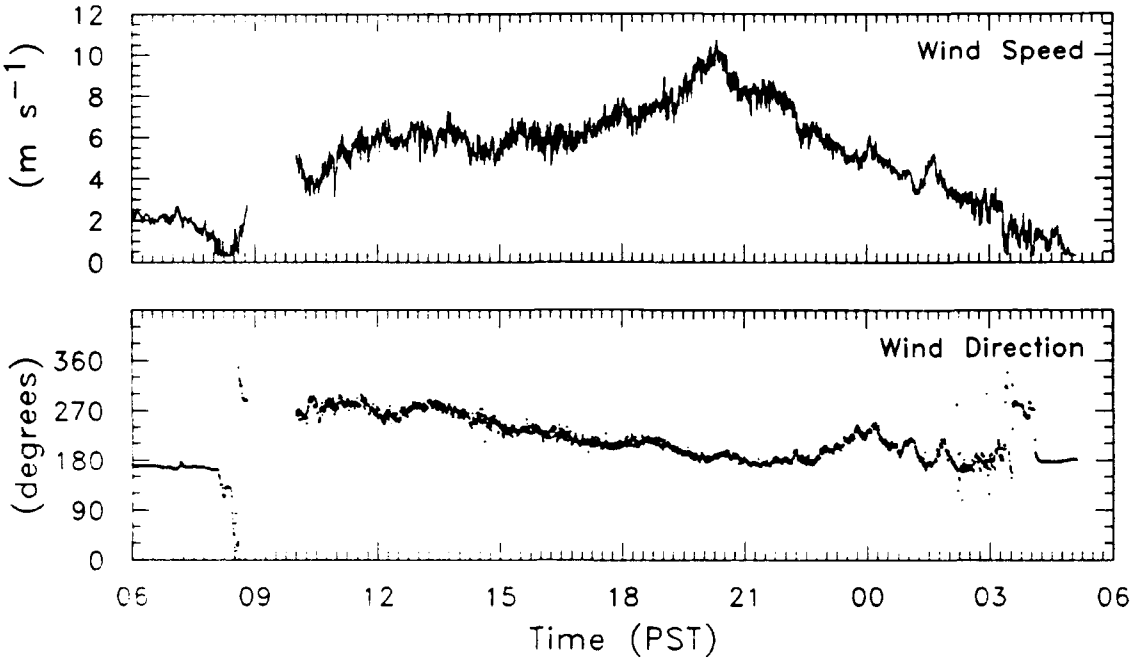

Moss Landing - 29 Sept 1987
Wind Speed
(m s^{-1})
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
20
18
16
14
12
10
8
Barometric Pressure
(mb)
1016
1014
1012
1010
1008
Shortwave Irradiance
(W m^{-2})
800
600
400
200
0
06
09
12
15
18
21
00
03
06
Time (PST)


Moss Landing - 30 Sept 1987
Wind Speed
(m s^{-1})
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
20
18
16
14
12
10
8
Barometric Pressure
(mb)
1016
1014
1012
1010
1008
Shortwave Irradiance
(W m^{-2})
800
600
400
200
0
06
09
12
15
18
21
00
03
06
Time (PST)

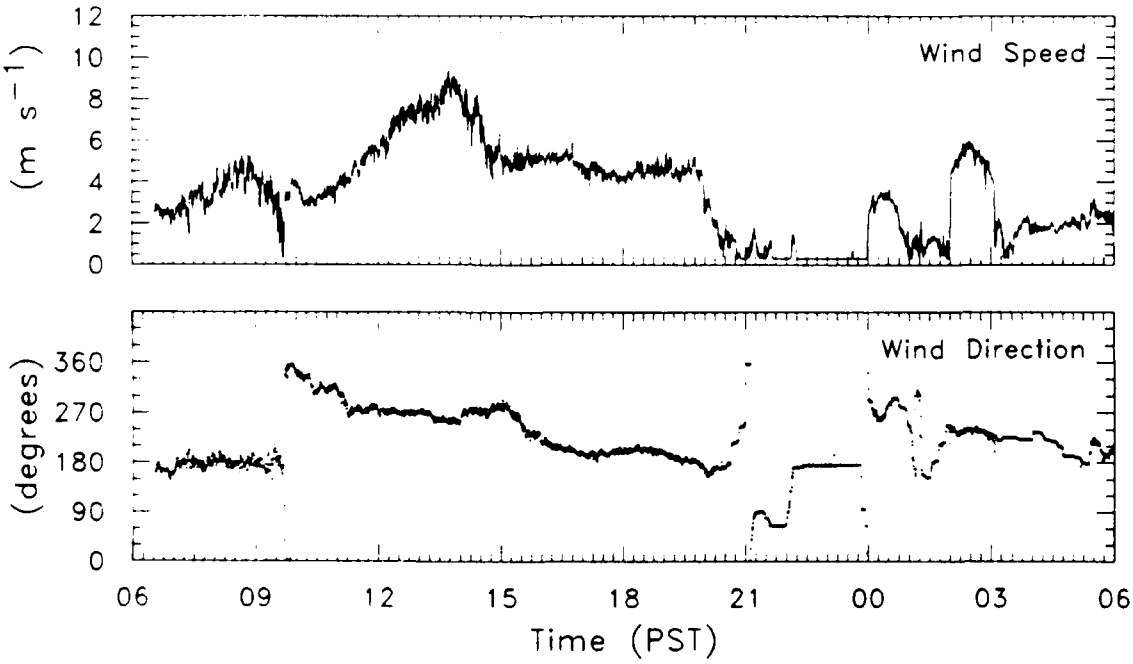
10. TIME SERIES, MARINA BEACH

This section presents graphs of data collected routinely by the Scripps Institution of Oceanography at Marina Beach (Fig. 1). Only the wind vector is recorded at this site.

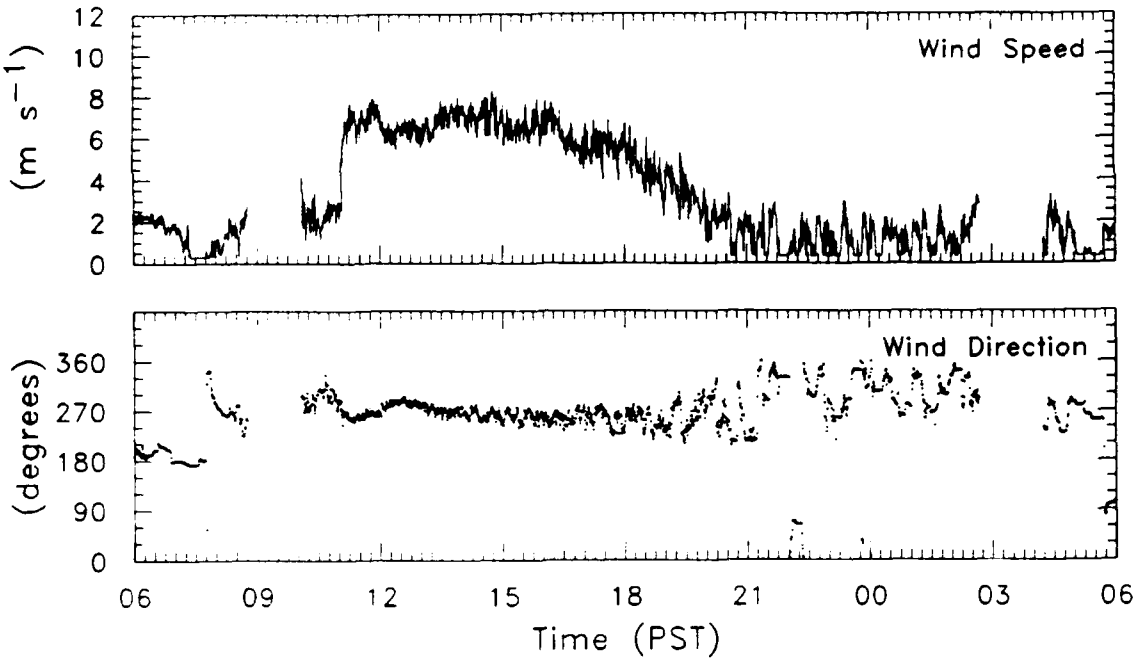
Marina Beach – 15 Sept 1987



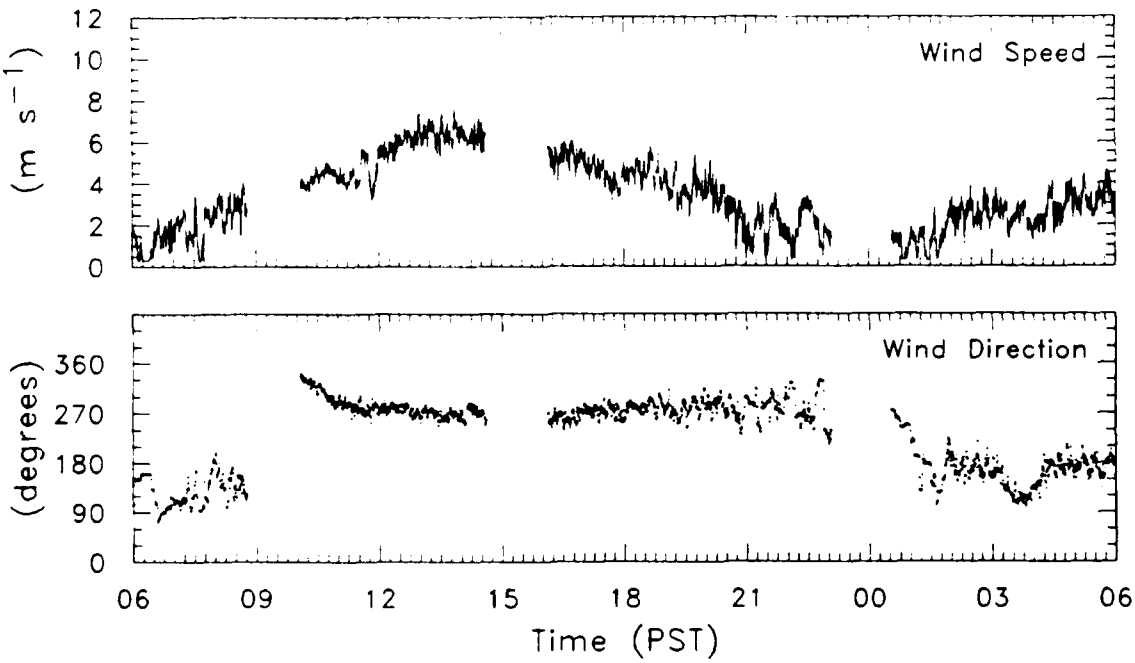
Marina Beach – 16 Sept 1987



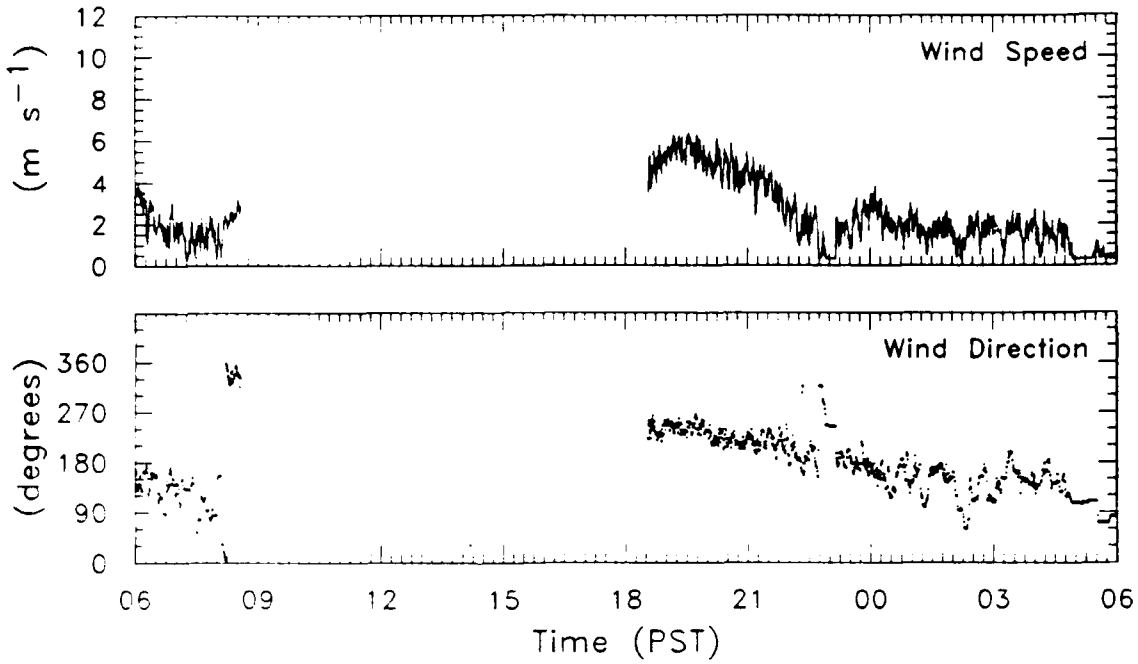
Marina Beach – 17 Sept 1987



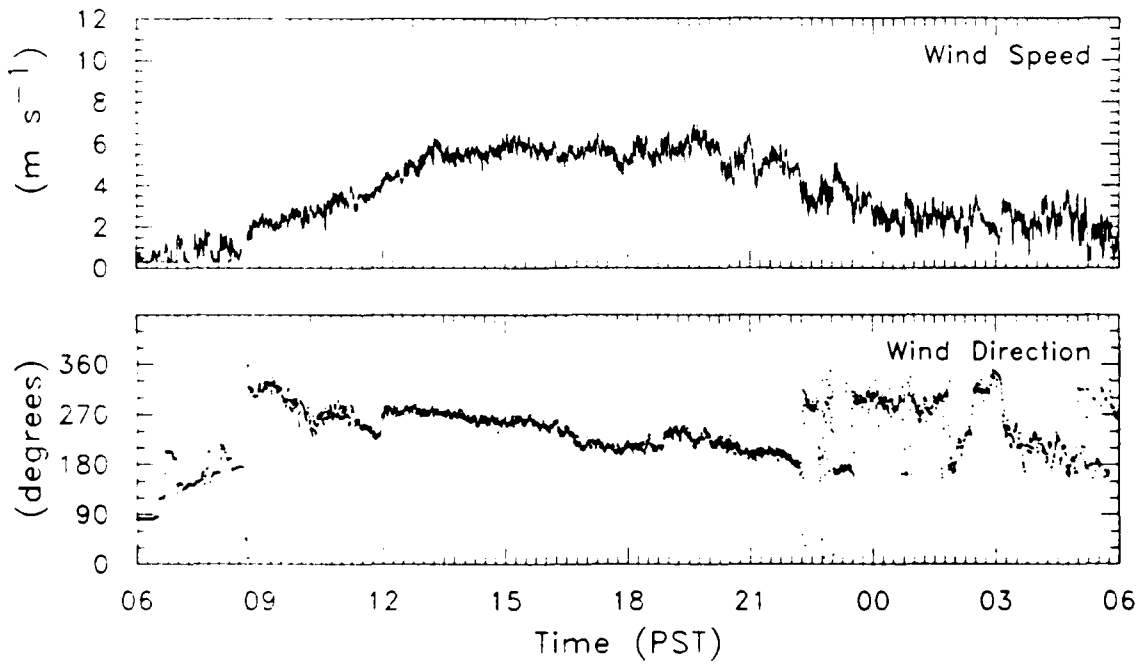
Marina Beach – 18 Sept 1987



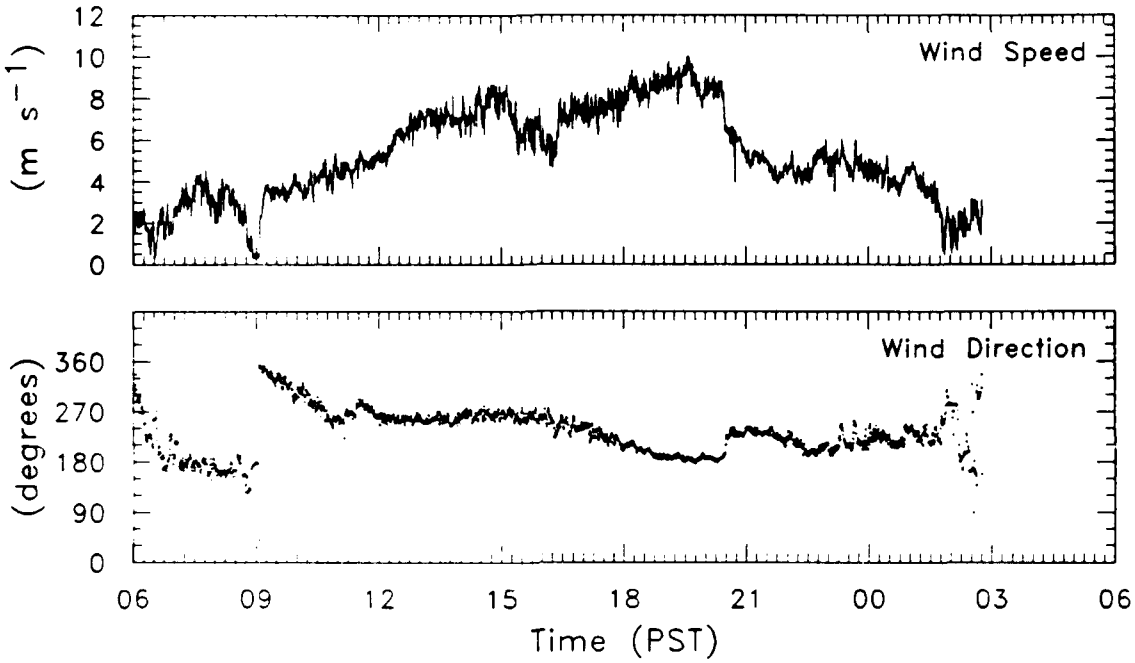
Marina Beach – 19 Sept 1987



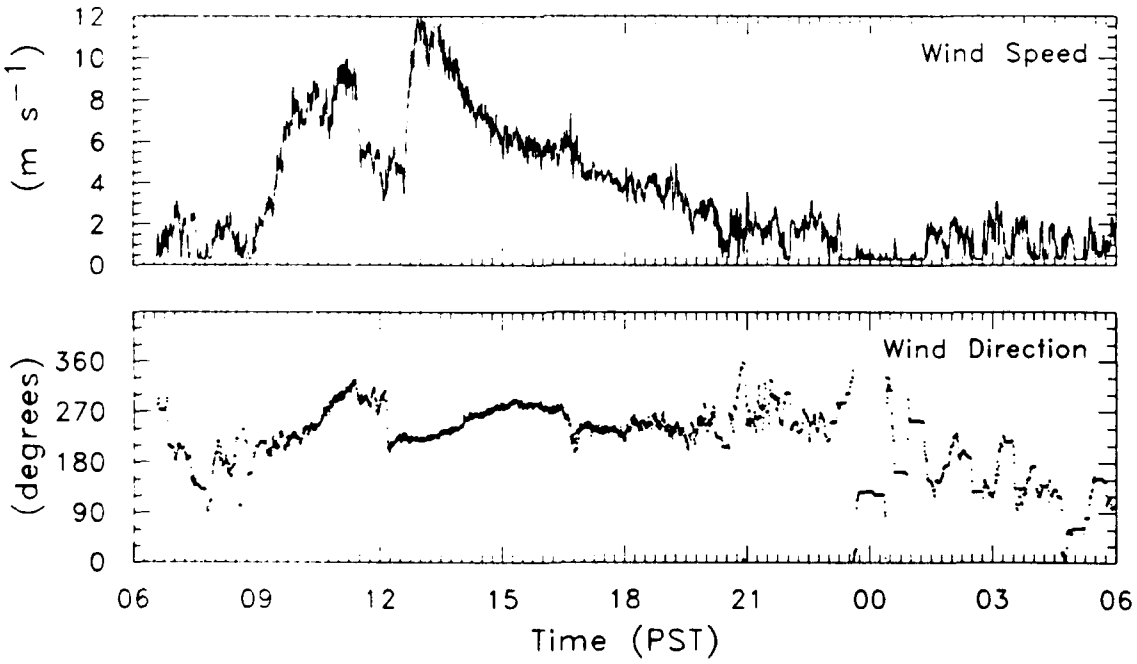
Marina Beach – 20 Sept 1987



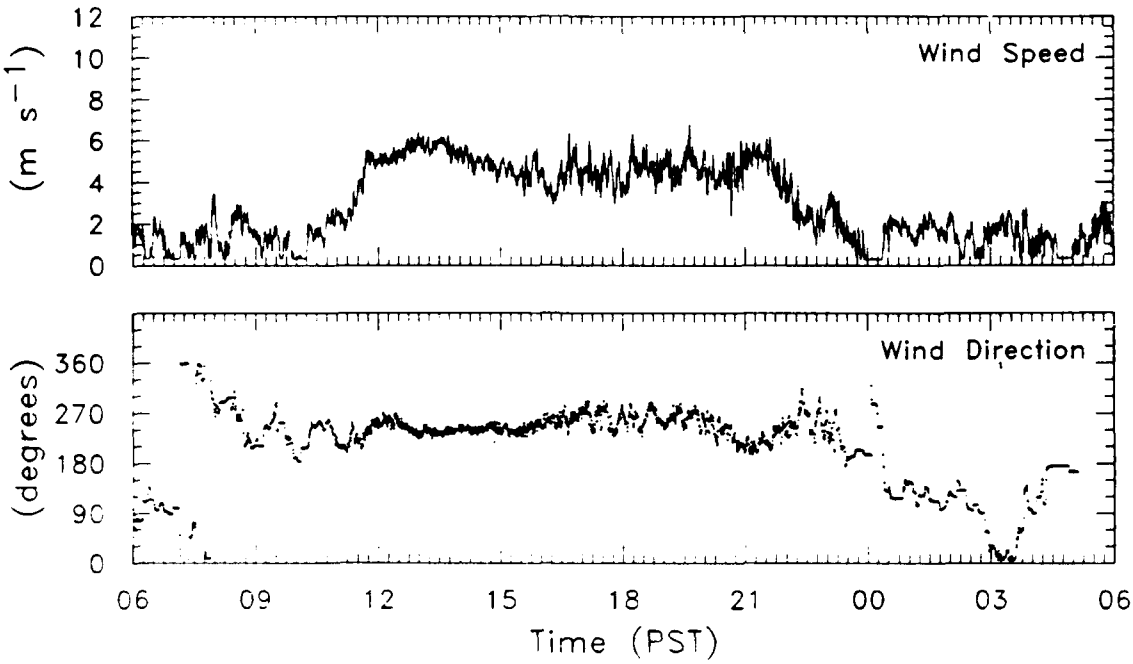
Marina Beach – 21 Sept 1987



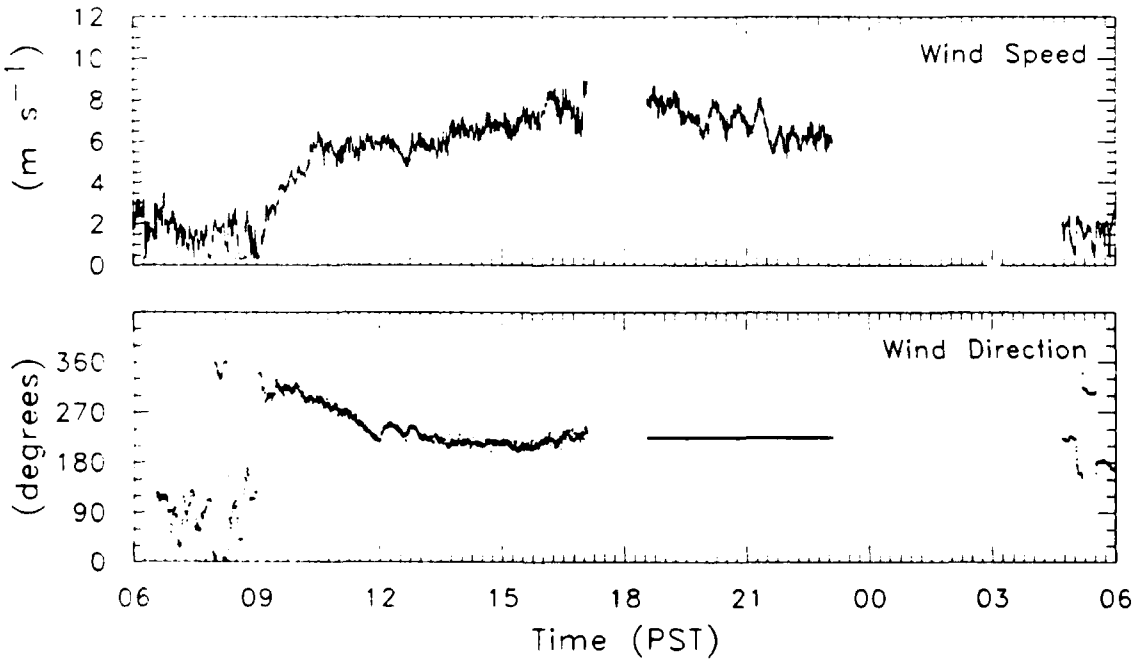
Marina Beach – 22 Sept 1987



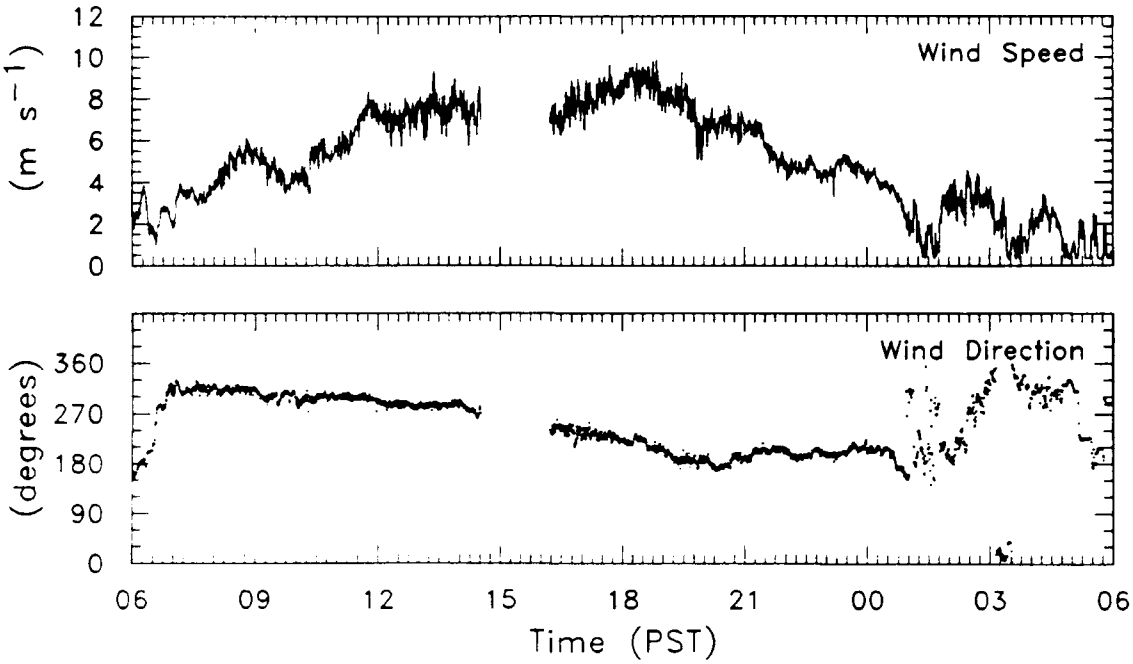
Marina Beach – 23 Sept 1987



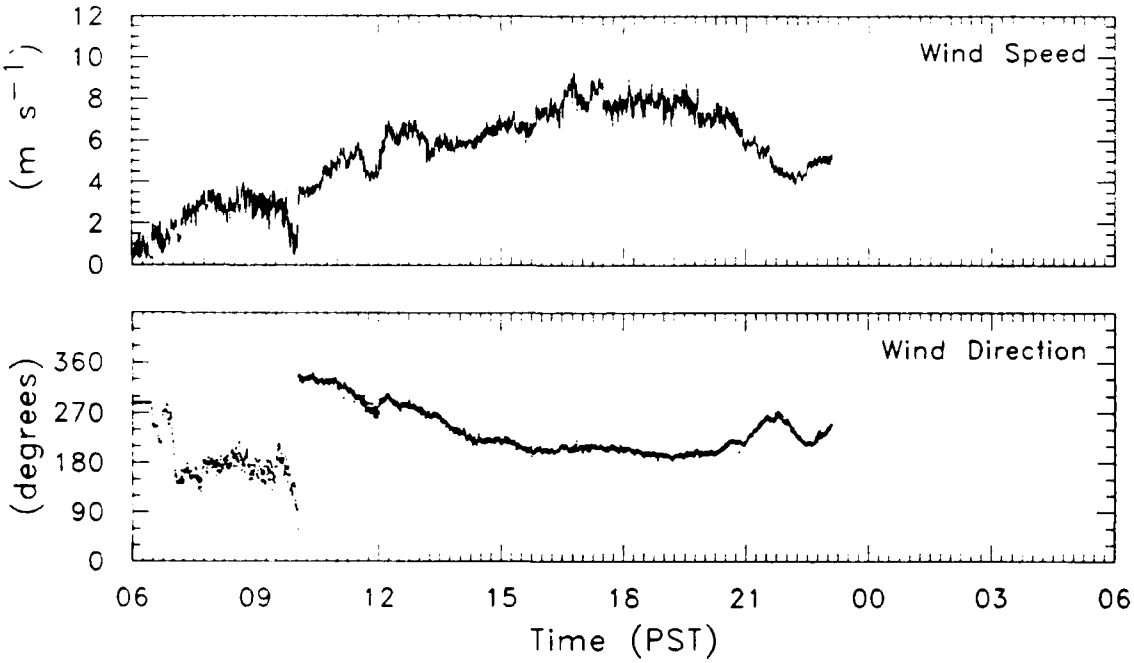
Marina Beach – 24 Sept 1987



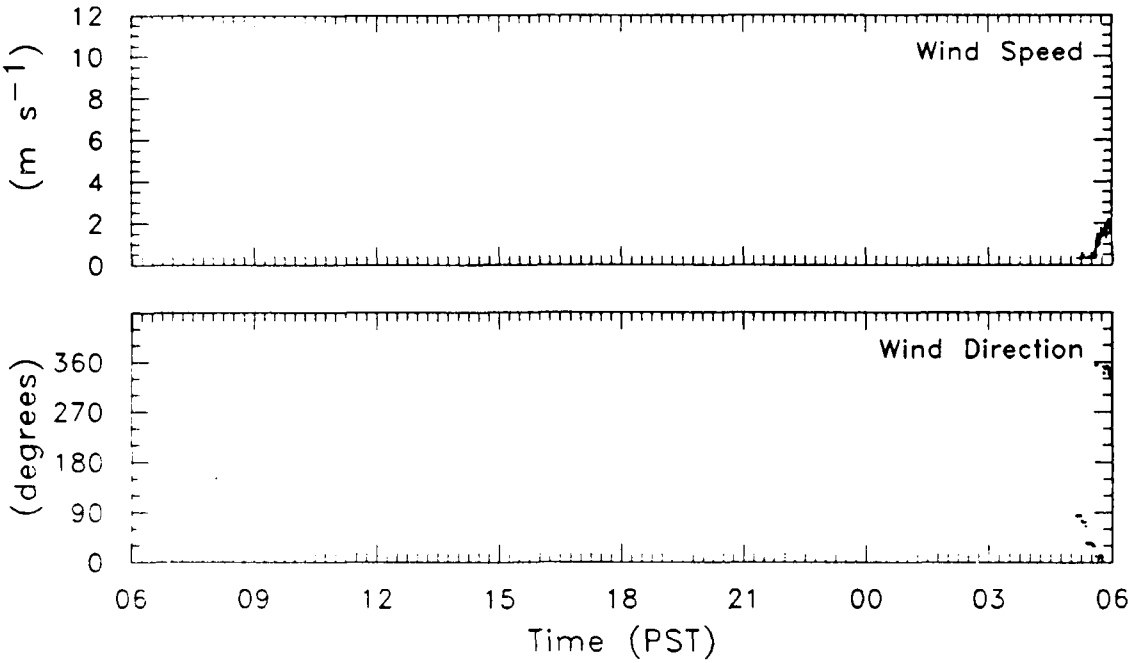
Marina Beach – 25 Sept 1987



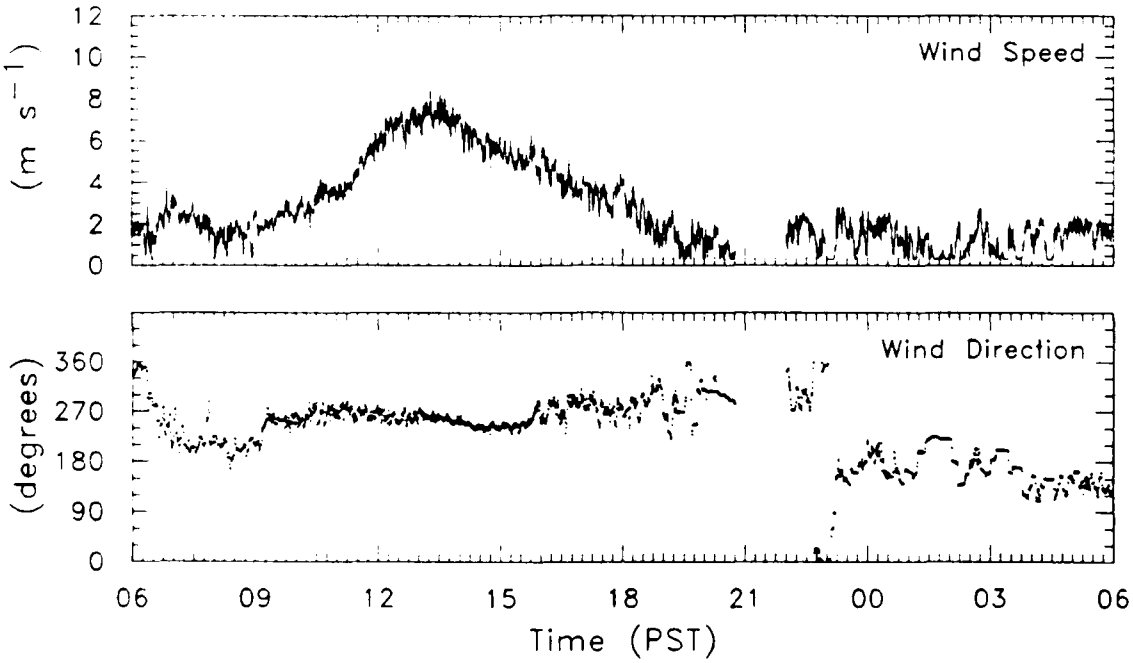
Marina Beach – 26 Sept 1987



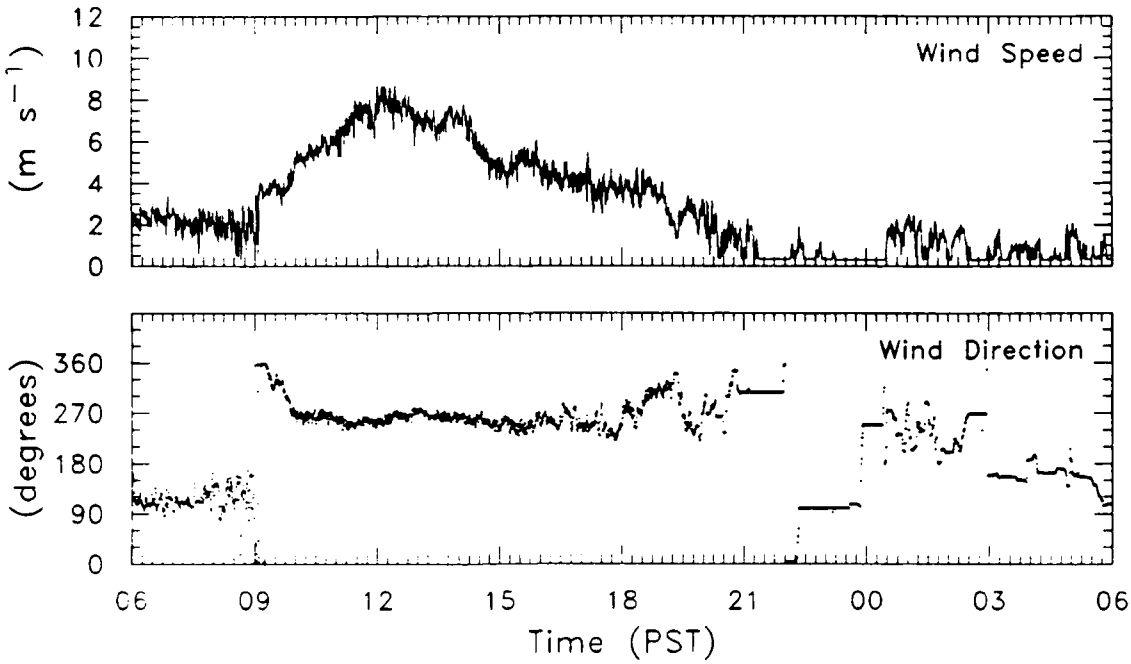
Marina Beach – 27 Sept 1987



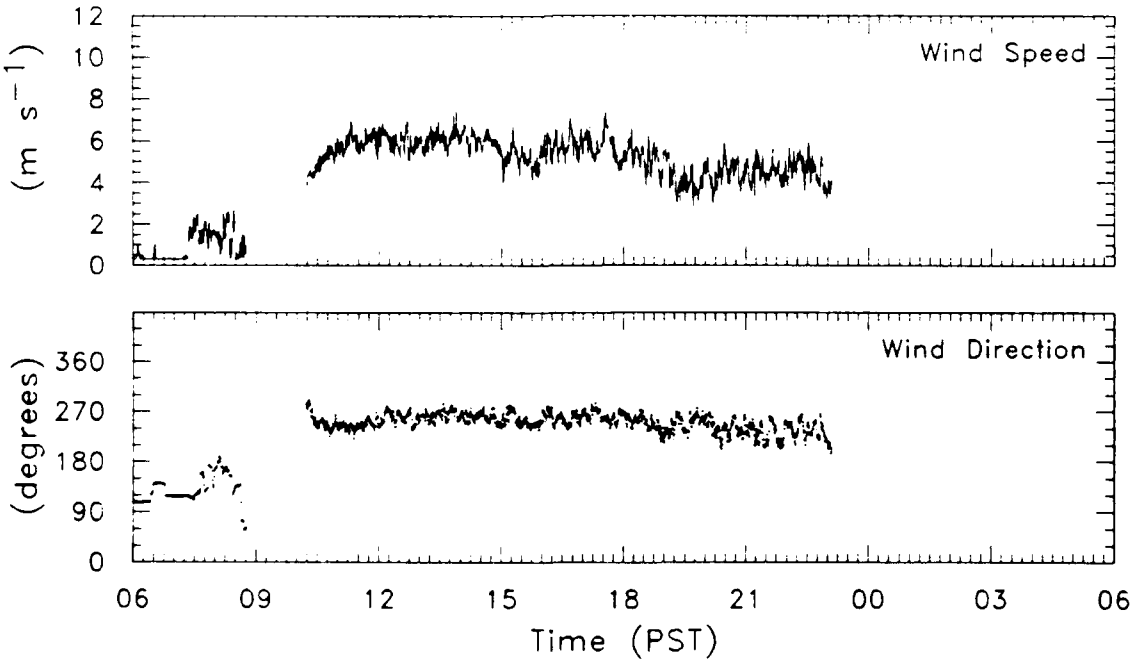
Marina Beach – 28 Sept 1987



Marina Beach – 29 Sept 1987

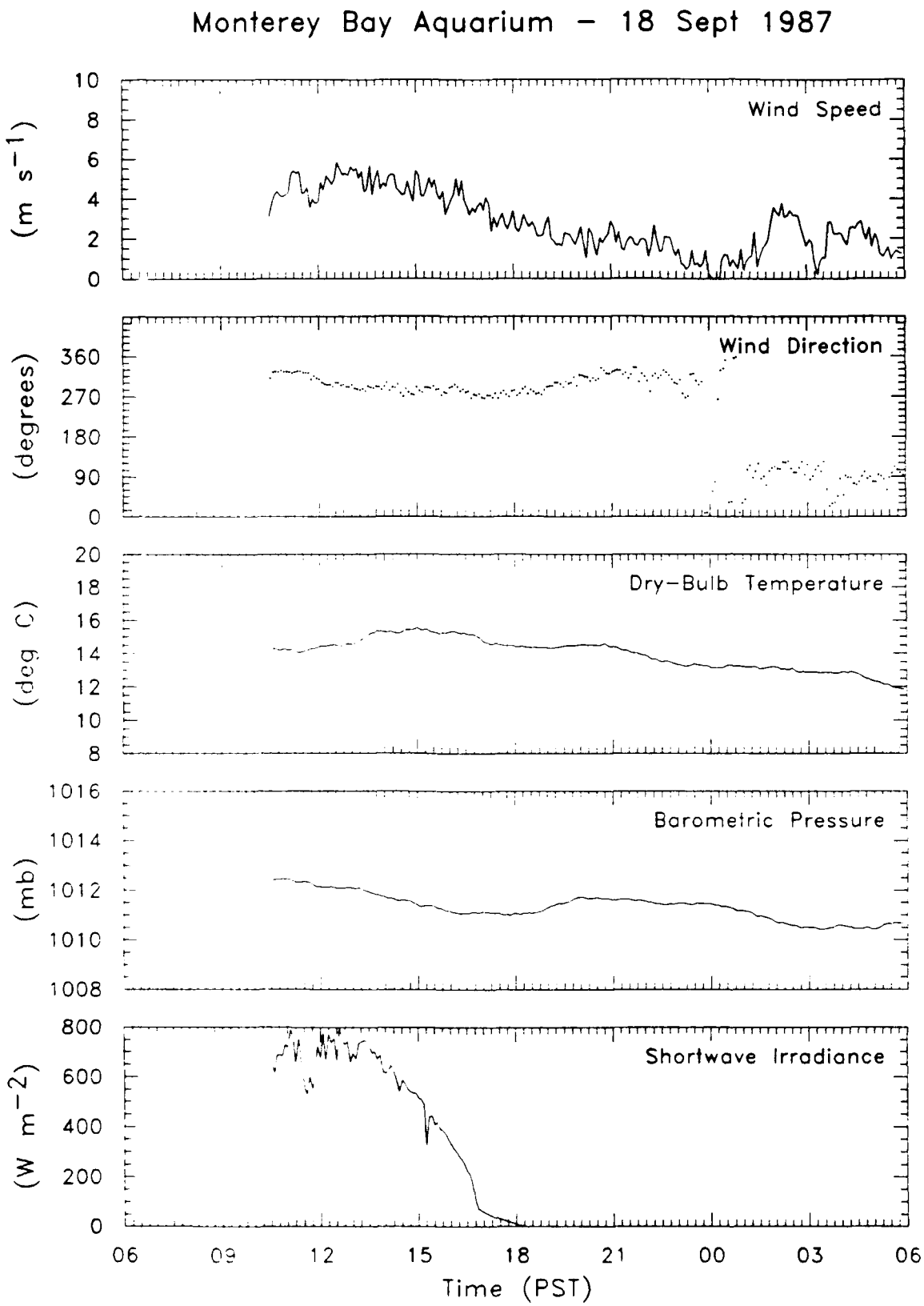


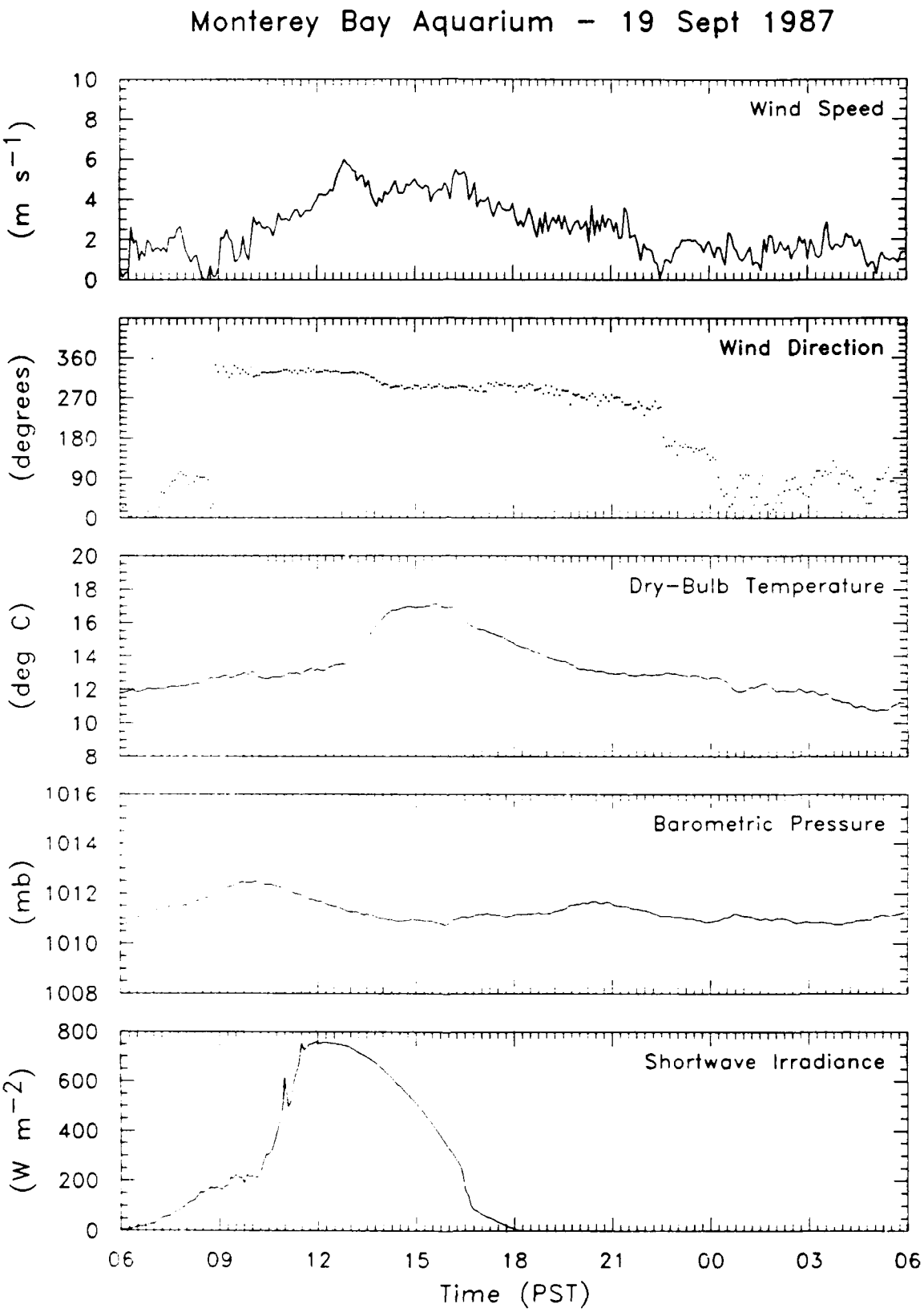
Marina Beach – 30 Sept 1987

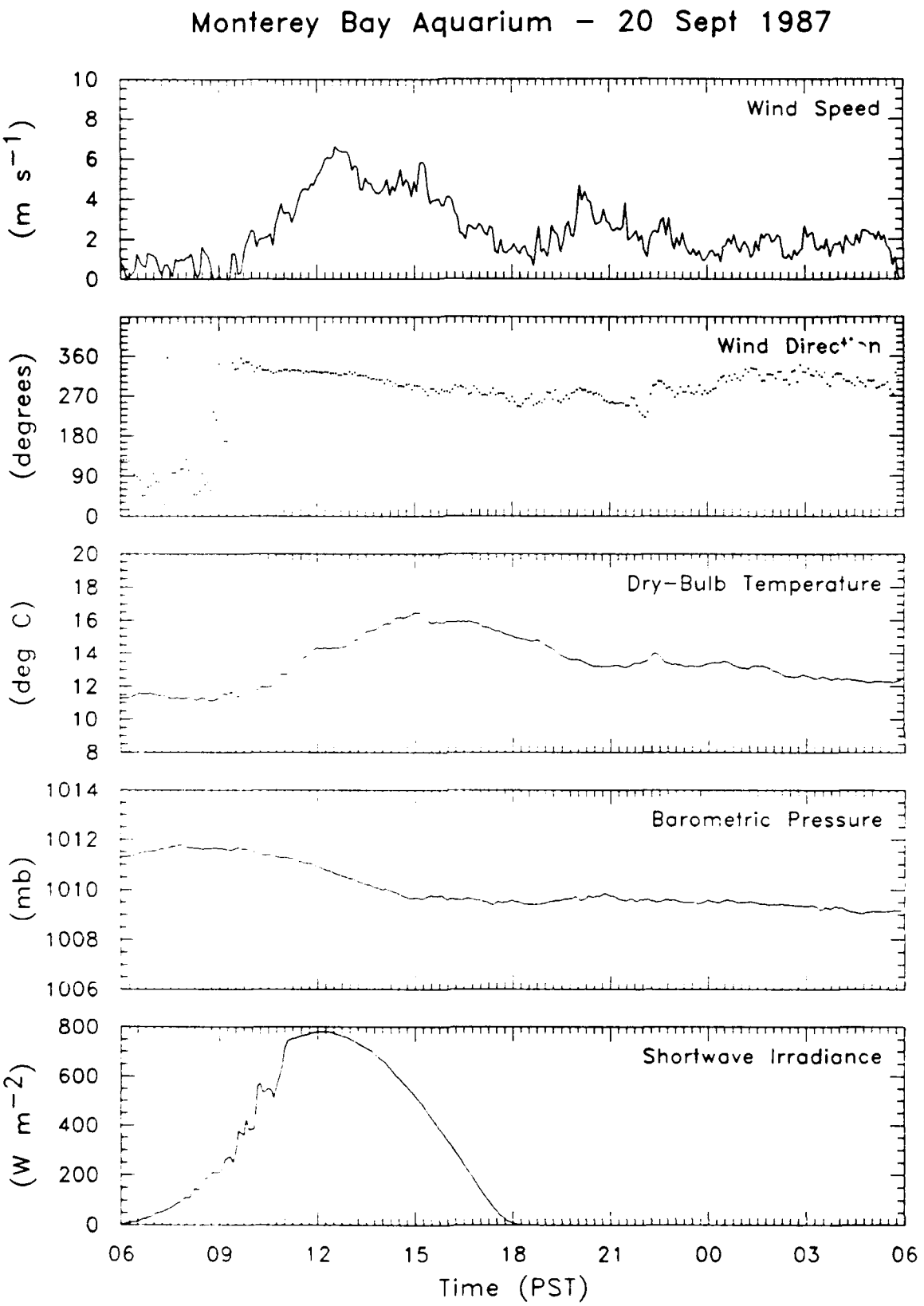


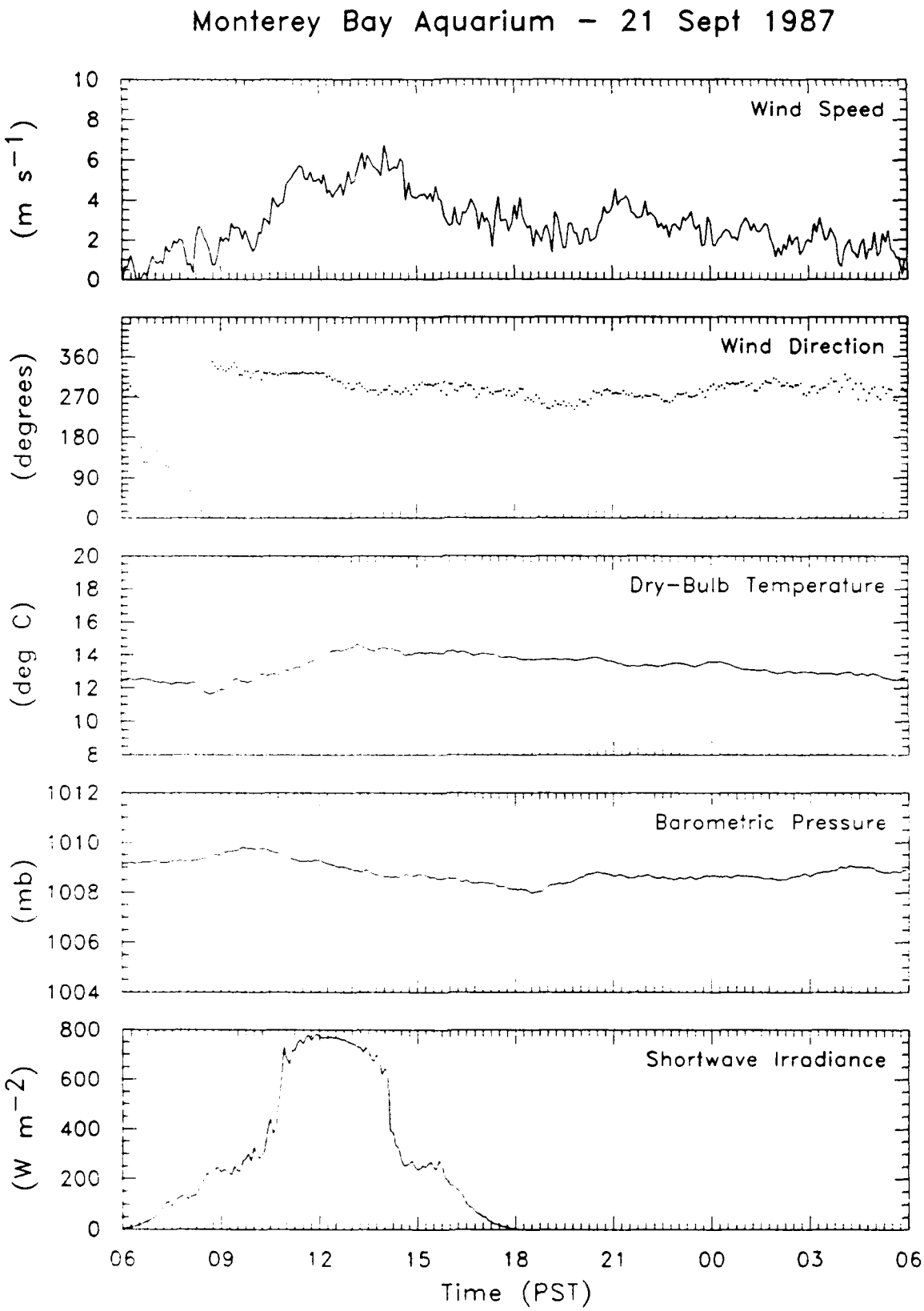
11. TIME SERIES, MONTEREY BAY AQUARIUM

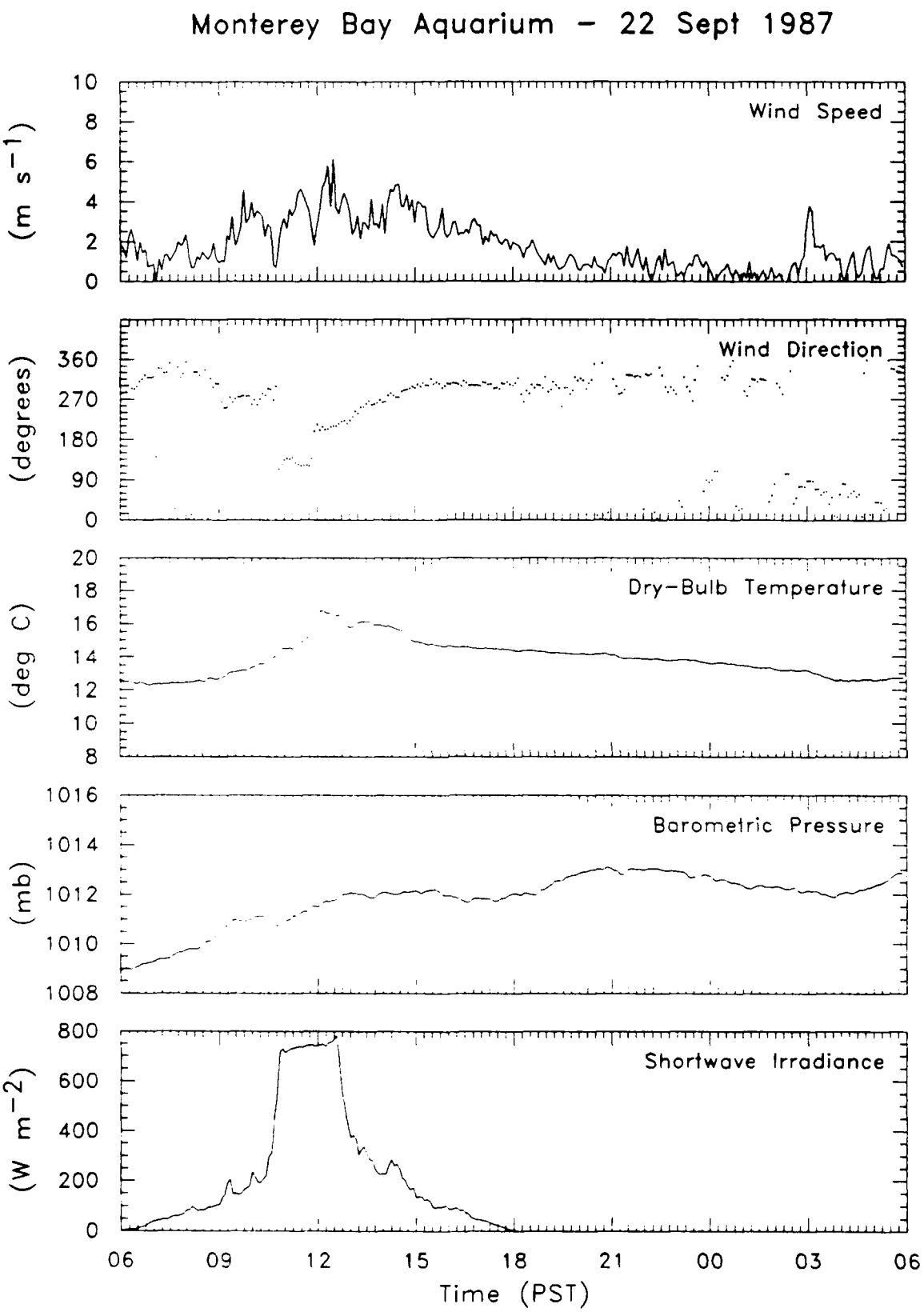
This section presents graphs of data collected routinely by the Monterey Bay Aquarium (Fig. 1). The sensors used are identical to those employed at the Moss Landing Marine Laboratories.

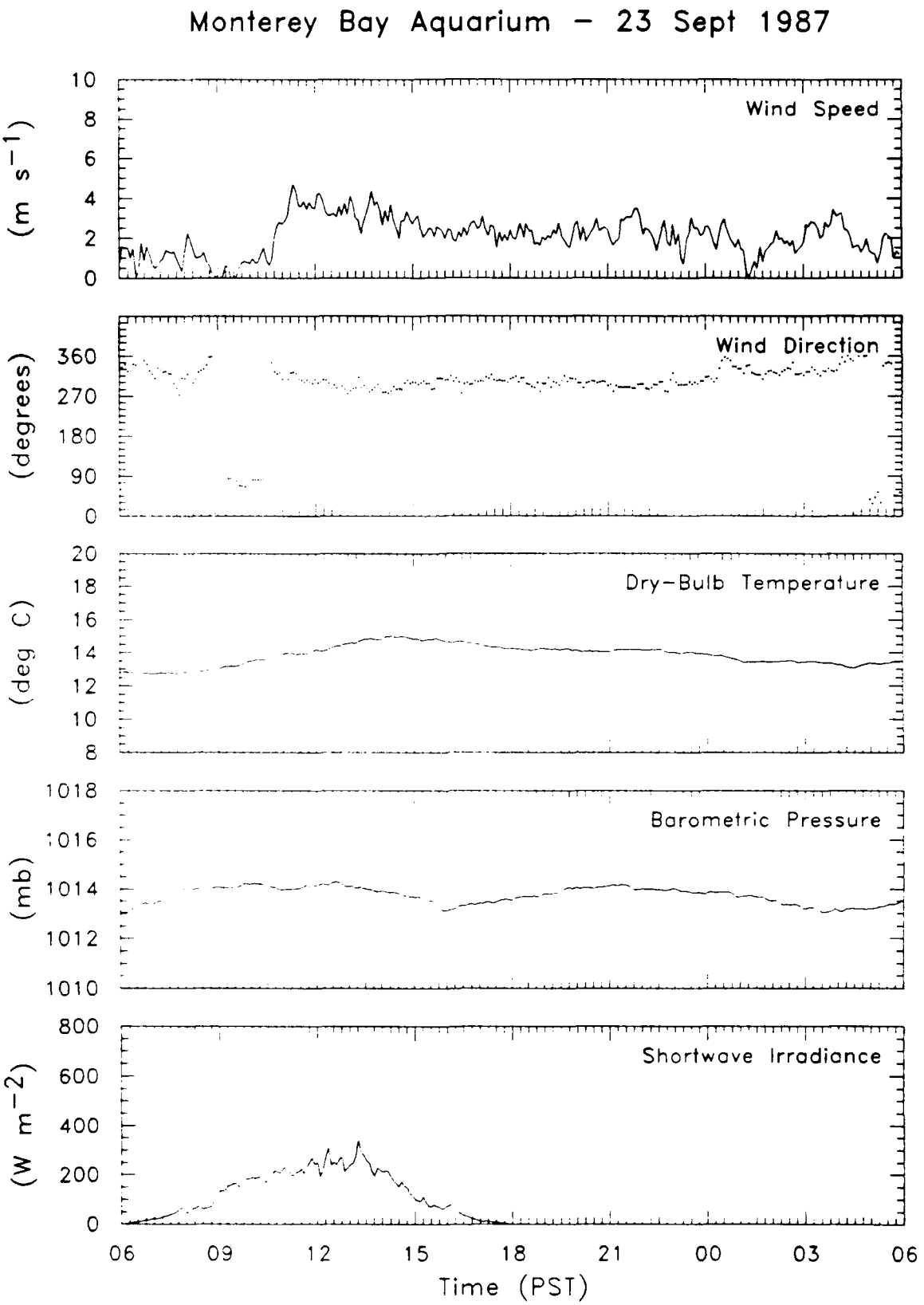

Monterey Bay Aquarium - 18 Sept 1987
Wind Speed
(m s^{-1})
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
20
18
16
14
12
10
8
Barometric Pressure
(mb)
1016
1014
1012
1010
1008
Shortwave Irradiance
(W m^{-2})
800
600
400
200
0
06
09
12
15
18
21
00
03
06
Time (PST)

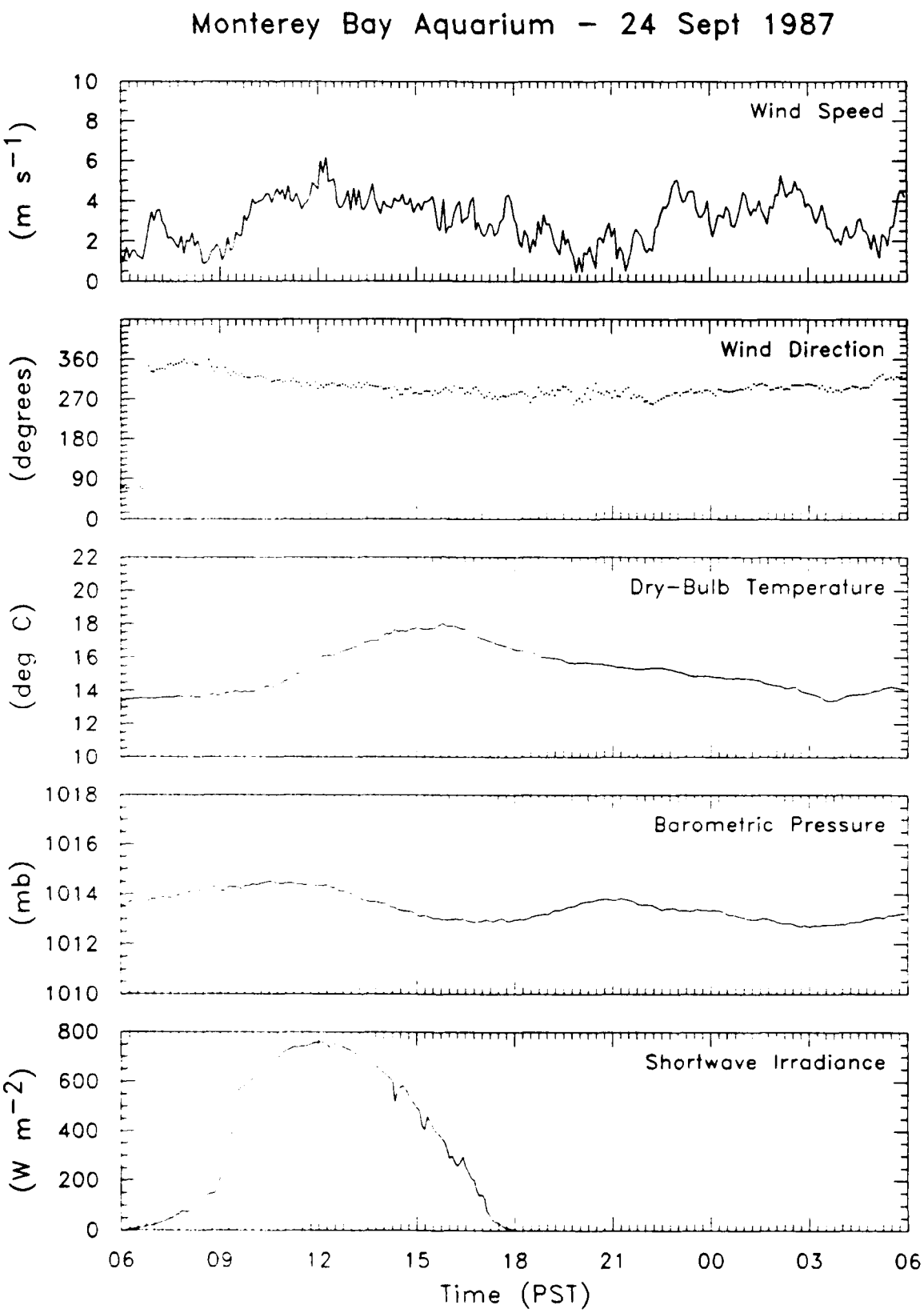

Monterey Bay Aquarium - 19 Sept 1987
Wind Speed
(m s^{-1})
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
20
18
16
14
12
10
8
Barometric Pressure
(mb)
1016
1014
1012
1010
1008
Shortwave Irradiance
(W m^{-2})
800
600
400
200
0
06
09
12
15
18
21
00
03
06
Time (PST)

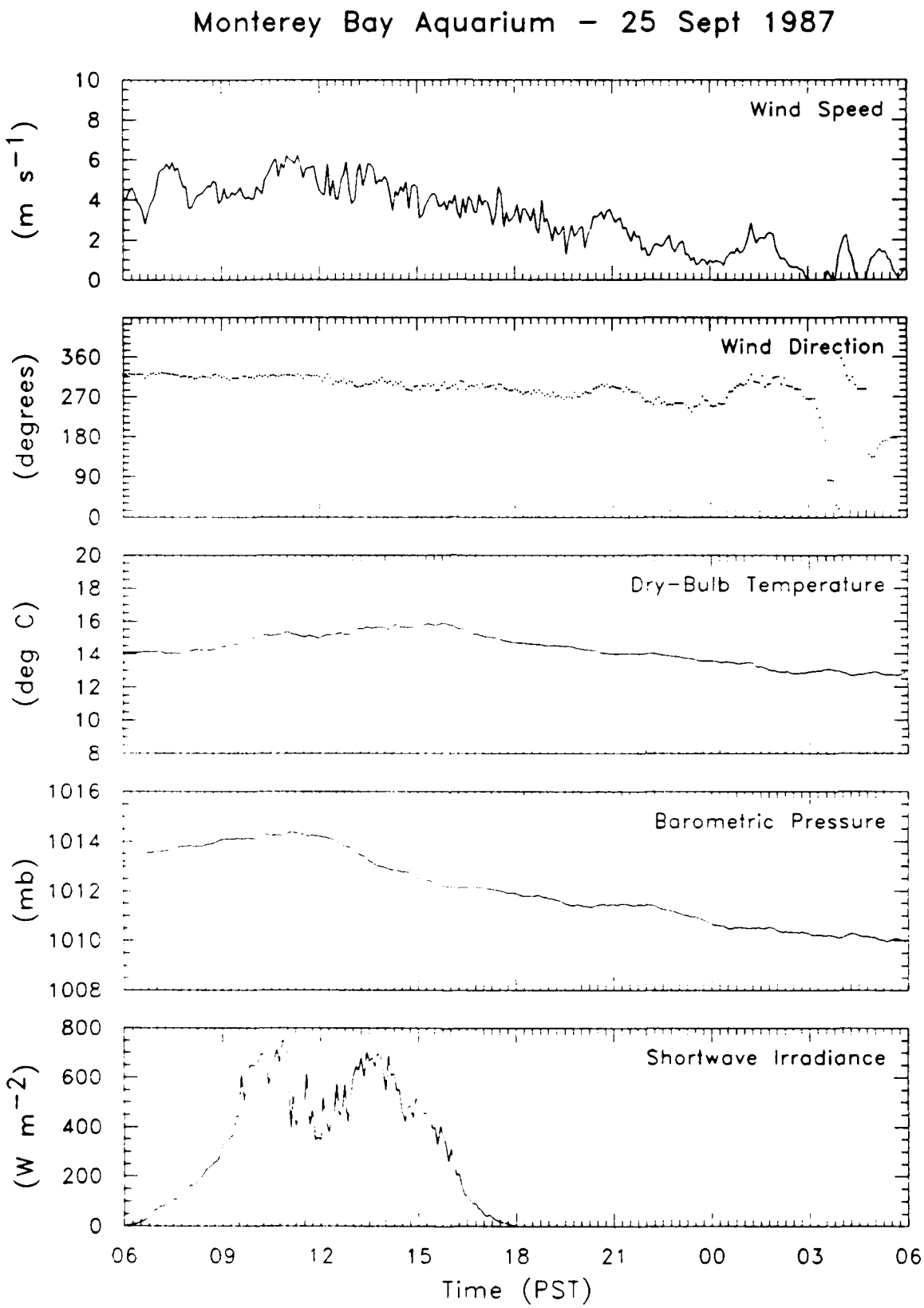

Monterey Bay Aquarium - 20 Sept 1987
Wind Speed
(m s^{-1})
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
20
18
16
14
12
10
8
Barometric Pressure
(mb)
1014
1012
1010
1008
1006
Shortwave Irradiance
(W m^{-2})
800
600
400
200
0
06
09
12
15
18
21
00
03
06
Time (PST)

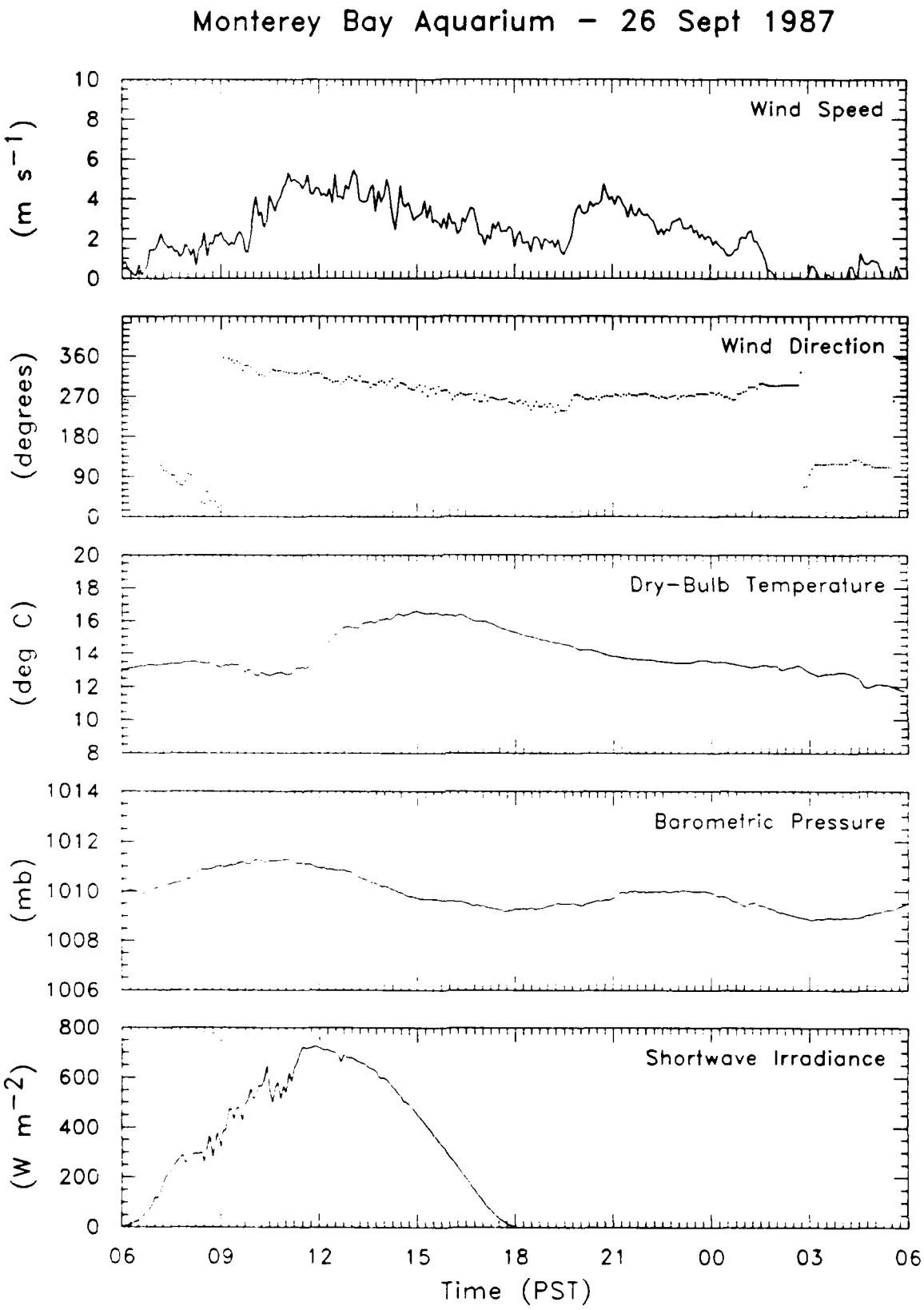

Monterey Bay Aquarium - 21 Sept 1987
Wind Speed
(m s^{-1})
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
20
18
16
14
12
10
8
Barometric Pressure
(mb)
1012
1010
1008
1006
1004
Shortwave Irradiance
(W m^{-2})
800
600
400
200
0
06
09
12
15
18
21
00
03
06
Time (PST)

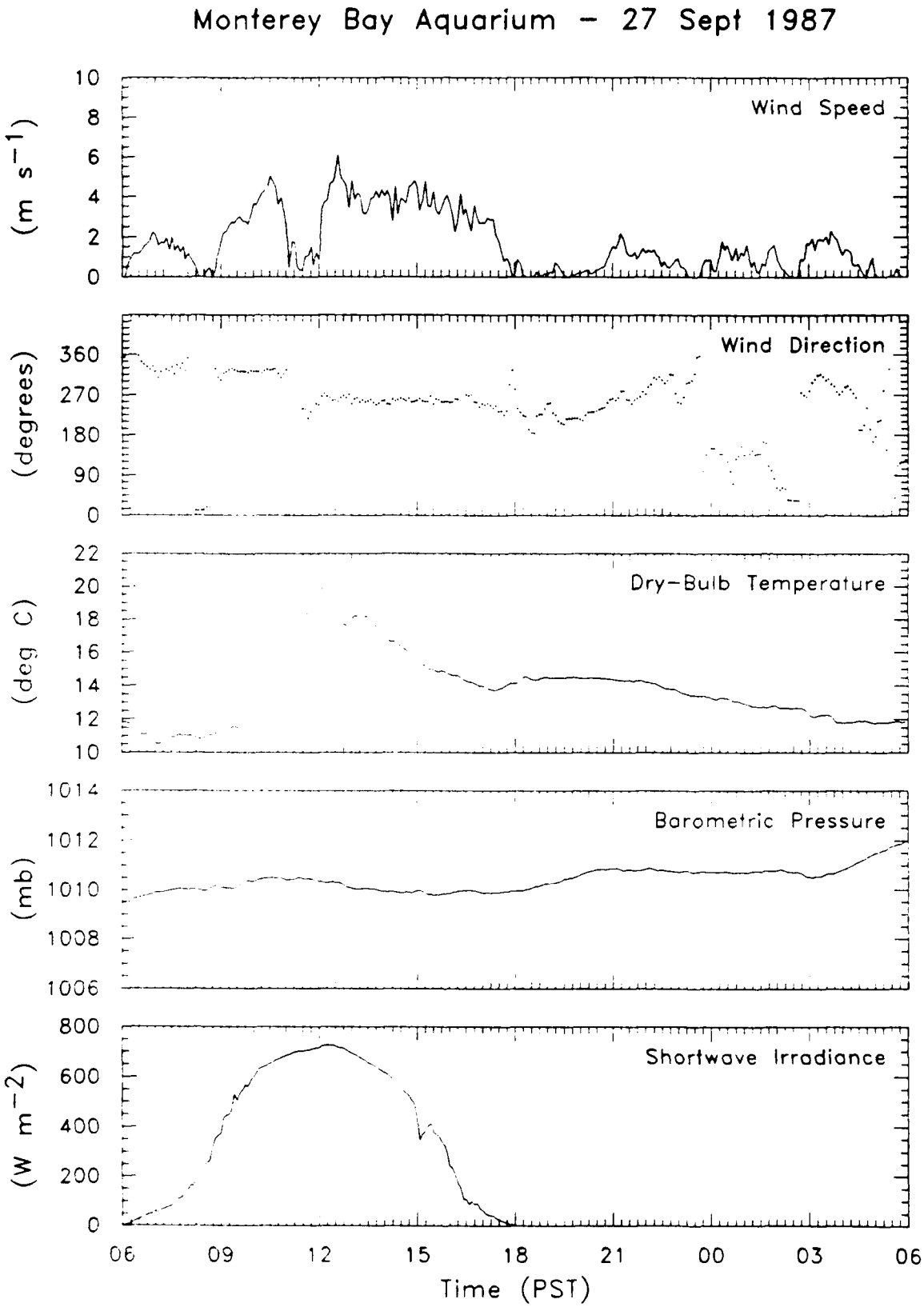

Monterey Bay Aquarium - 22 Sept 1987
Wind Speed
(m s^{-1})
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
20
18
16
14
12
10
8
Barometric Pressure
(mb)
1016
1014
1012
1010
1008
Shortwave Irradiance
(W m^{-2})
800
600
400
200
0
06
09
12
15
18
21
00
03
06
Time (PST)

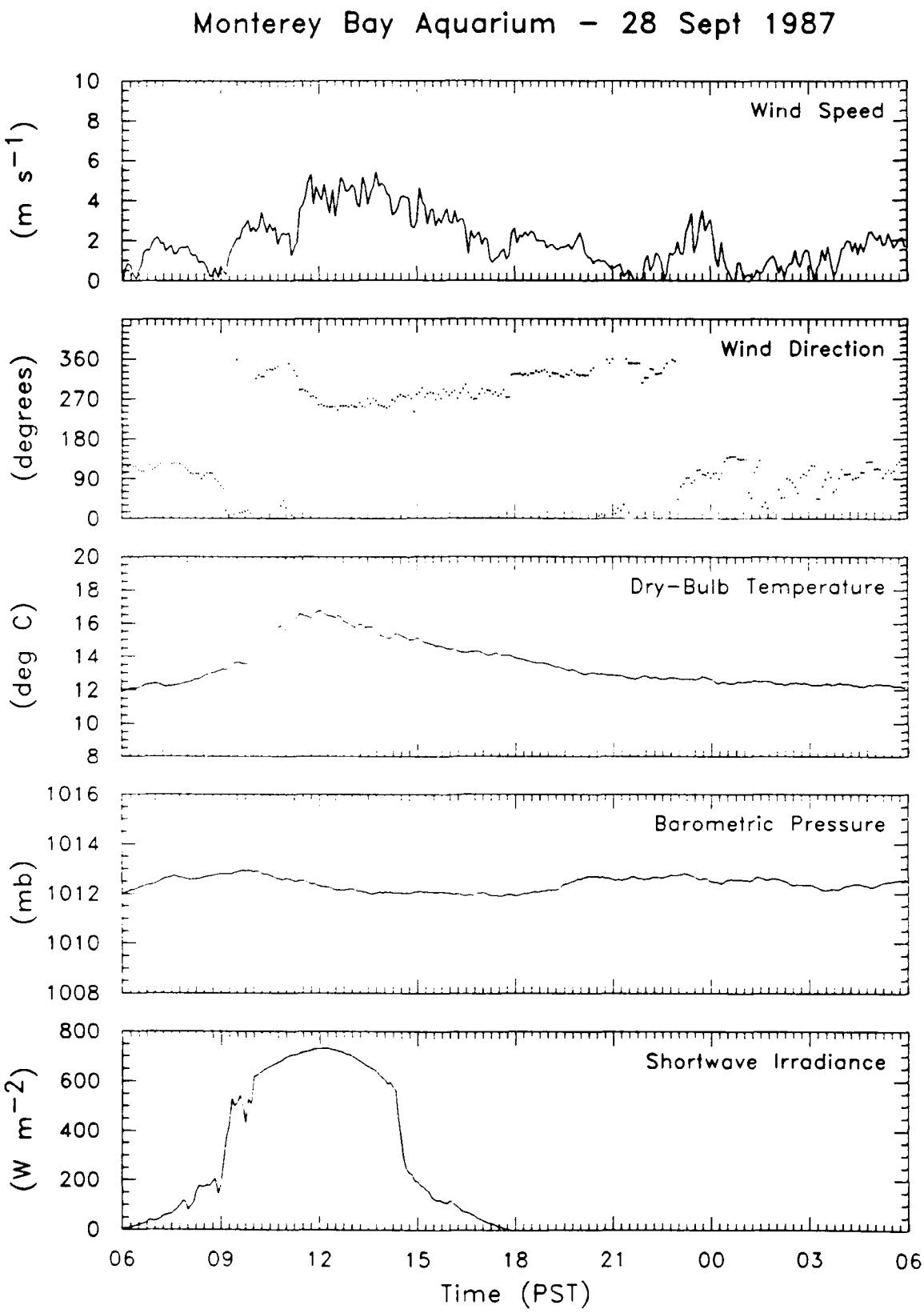

Monterey Bay Aquarium – 23 Sept 1987
Wind Speed
(m s^{-1})
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
20
18
16
14
12
10
8
Barometric Pressure
(mb)
1018
1016
1014
1012
1010
Shortwave Irradiance
(W m^{-2})
800
600
400
200
0
06
09
12
15
18
21
00
03
06
Time (PST)

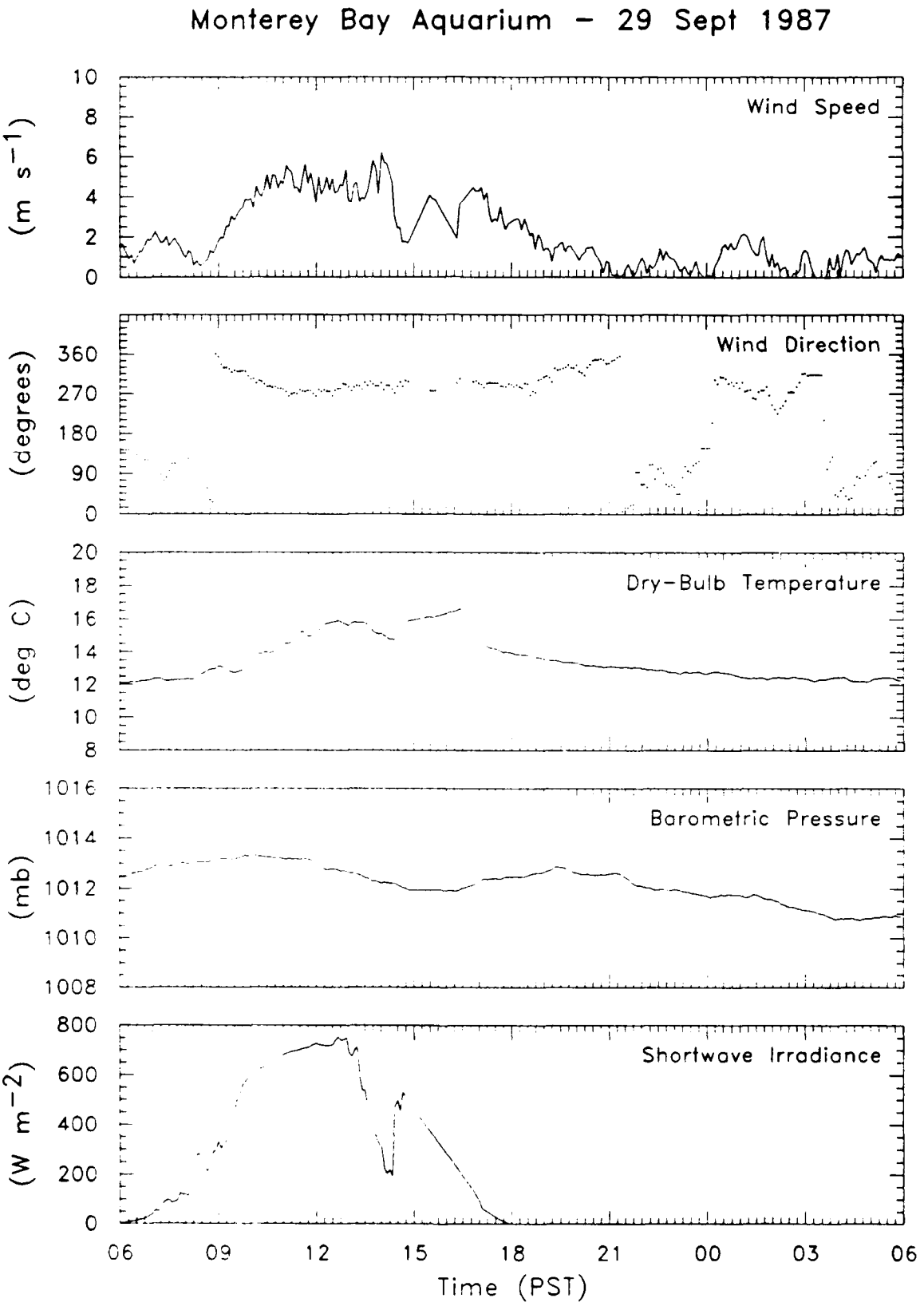

Monterey Bay Aquarium - 24 Sept 1987
Wind Speed
(m s^{-1})
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
22
20
18
16
14
12
10
Barometric Pressure
(mb)
1018
1016
1014
1012
1010
Shortwave Irradiance
(W m^{-2})
800
600
400
200
0
06
09
12
15
18
21
00
03
06
Time (PST)

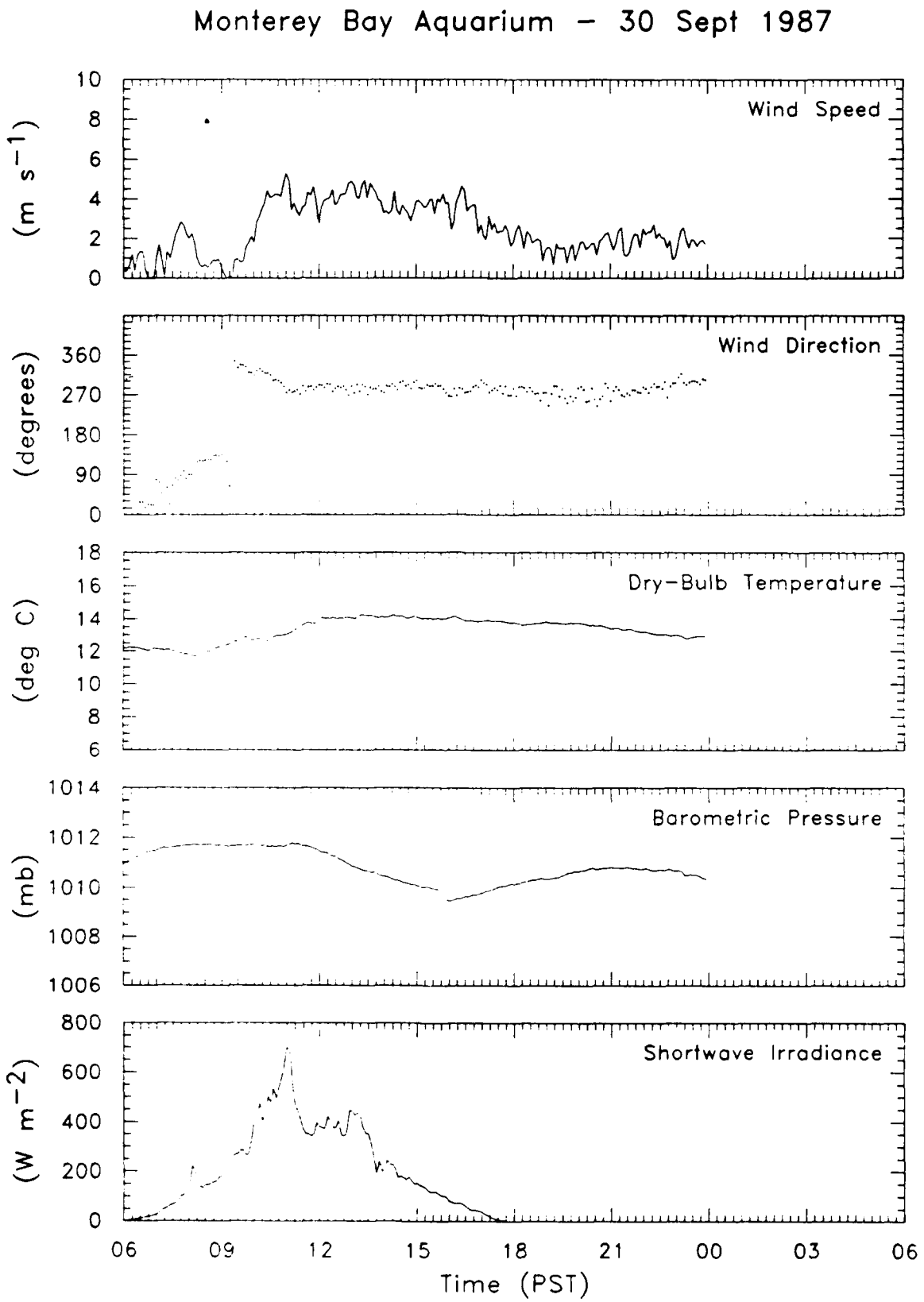

Monterey Bay Aquarium – 25 Sept 1987
Wind Speed
(m s^{-1})
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
20
18
16
14
12
10
8
Barometric Pressure
(mb)
1016
1014
1012
1010
1008
Shortwave Irradiance
(W m^{-2})
800
600
400
200
0
06
09
12
15
18
21
00
03
06
Time (PST)


Monterey Bay Aquarium - 26 Sept 1987
Wind Speed
(m s^{-1})
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
20
18
16
14
12
10
8
Barometric Pressure
(mb)
1014
1012
1010
1008
1006
Shortwave Irradiance
(W m^{-2})
800
600
400
200
0
06
09
12
15
18
21
00
03
06
Time (PST)


Monterey Bay Aquarium - 27 Sept 1987
Wind Speed
(m s^{-1})
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
22
20
18
16
14
12
10
Barometric Pressure
(mb)
1014
1012
1010
1008
1006
Shortwave Irradiance
(W m^{-2})
800
600
400
200
0
06
09
12
15
18
21
00
03
06
Time (PST)

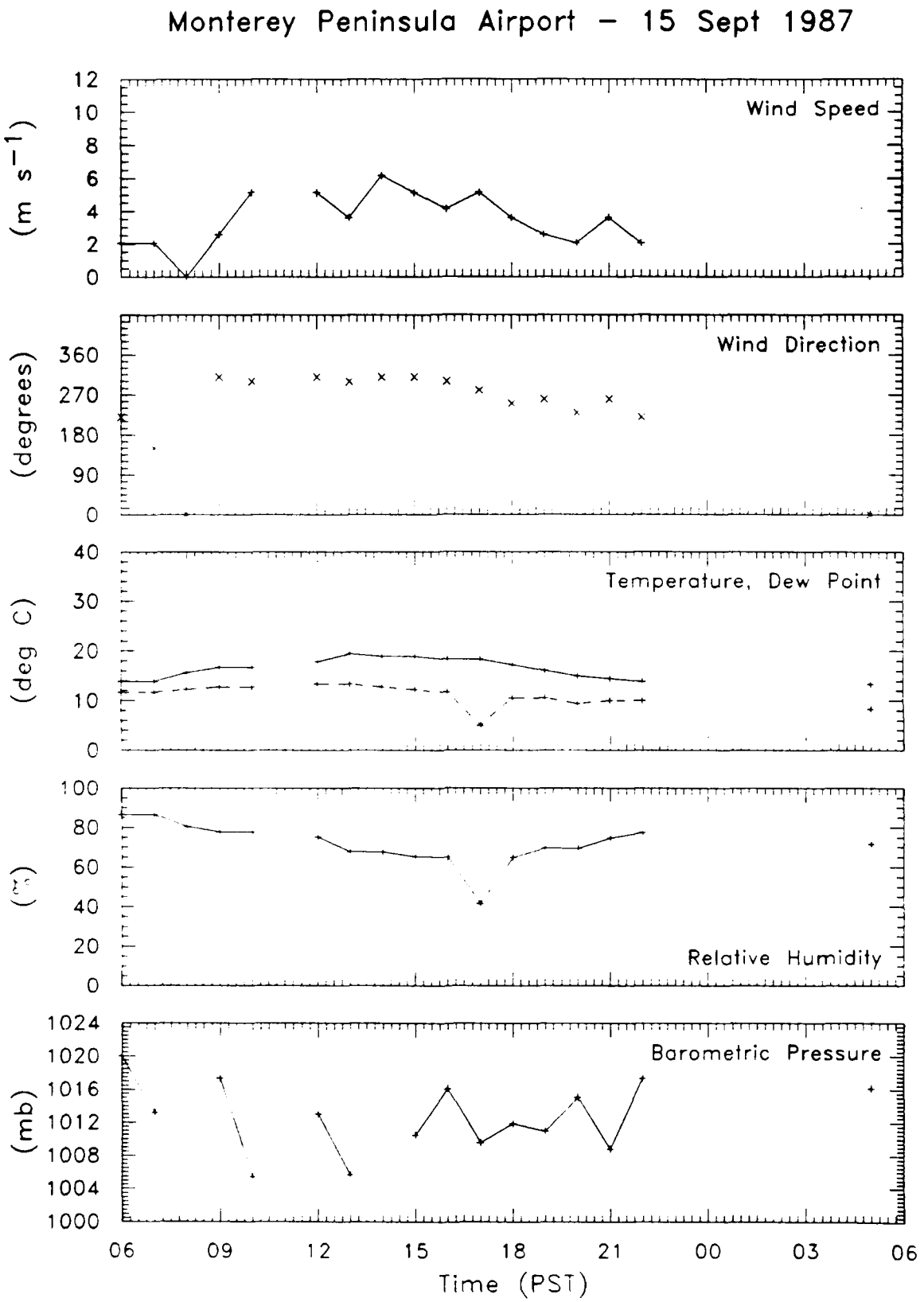

Monterey Bay Aquarium - 28 Sept 1987
Wind Speed
(m s^{-1})
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
20
18
16
14
12
10
8
Barometric Pressure
(mb)
1016
1014
1012
1010
1008
Shortwave Irradiance
(W m^{-2})
800
600
400
200
0
06
09
12
15
18
21
00
03
06
Time (PST)

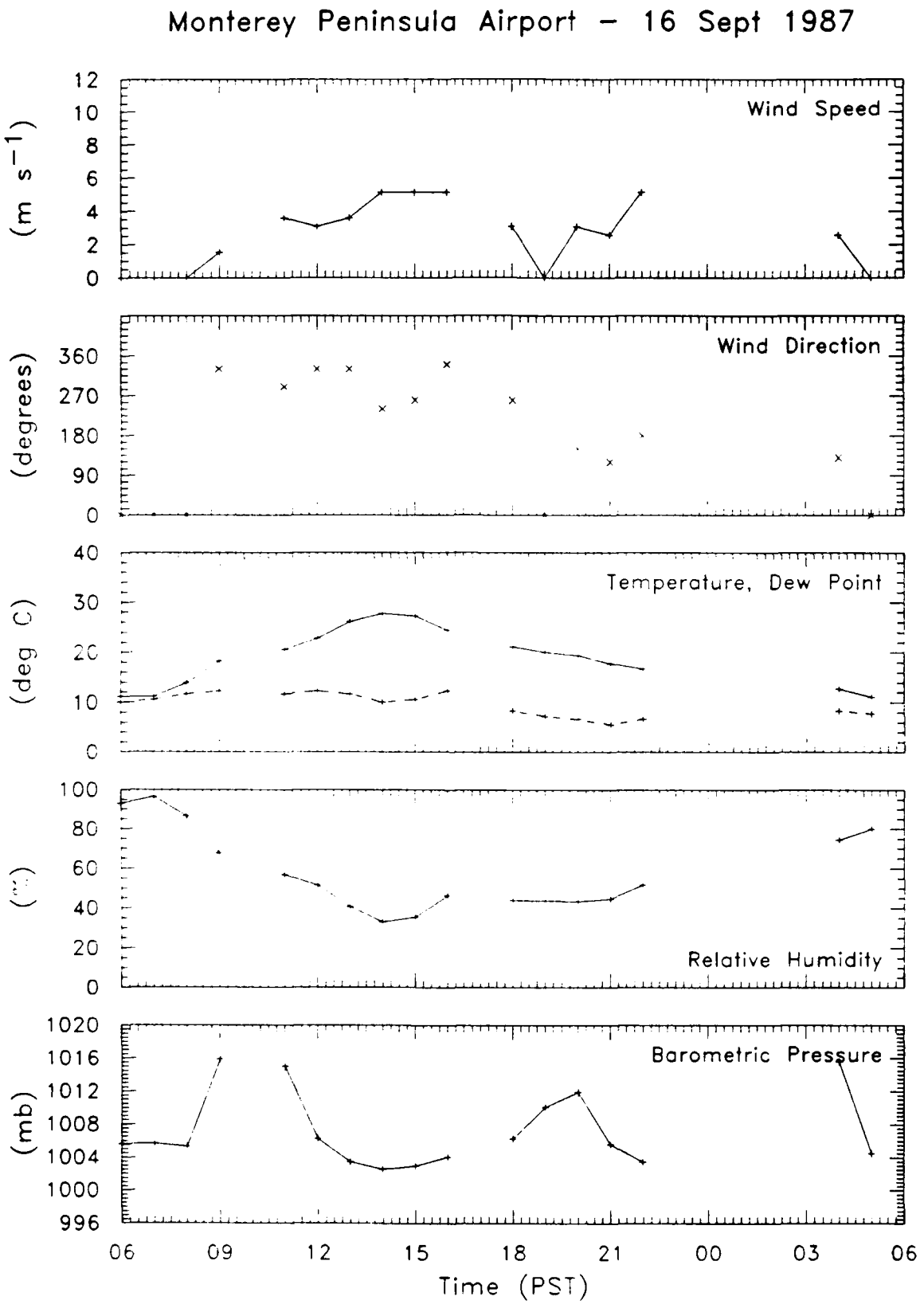

Monterey Bay Aquarium - 29 Sept 1987
Wind Speed
(m s^{-1})
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
20
18
16
14
12
10
8
Barometric Pressure
(mb)
1016
1014
1012
1010
1008
Shortwave Irradiance
(W m^{-2})
800
600
400
200
0
06
09
12
15
18
21
00
03
06
Time (PST)

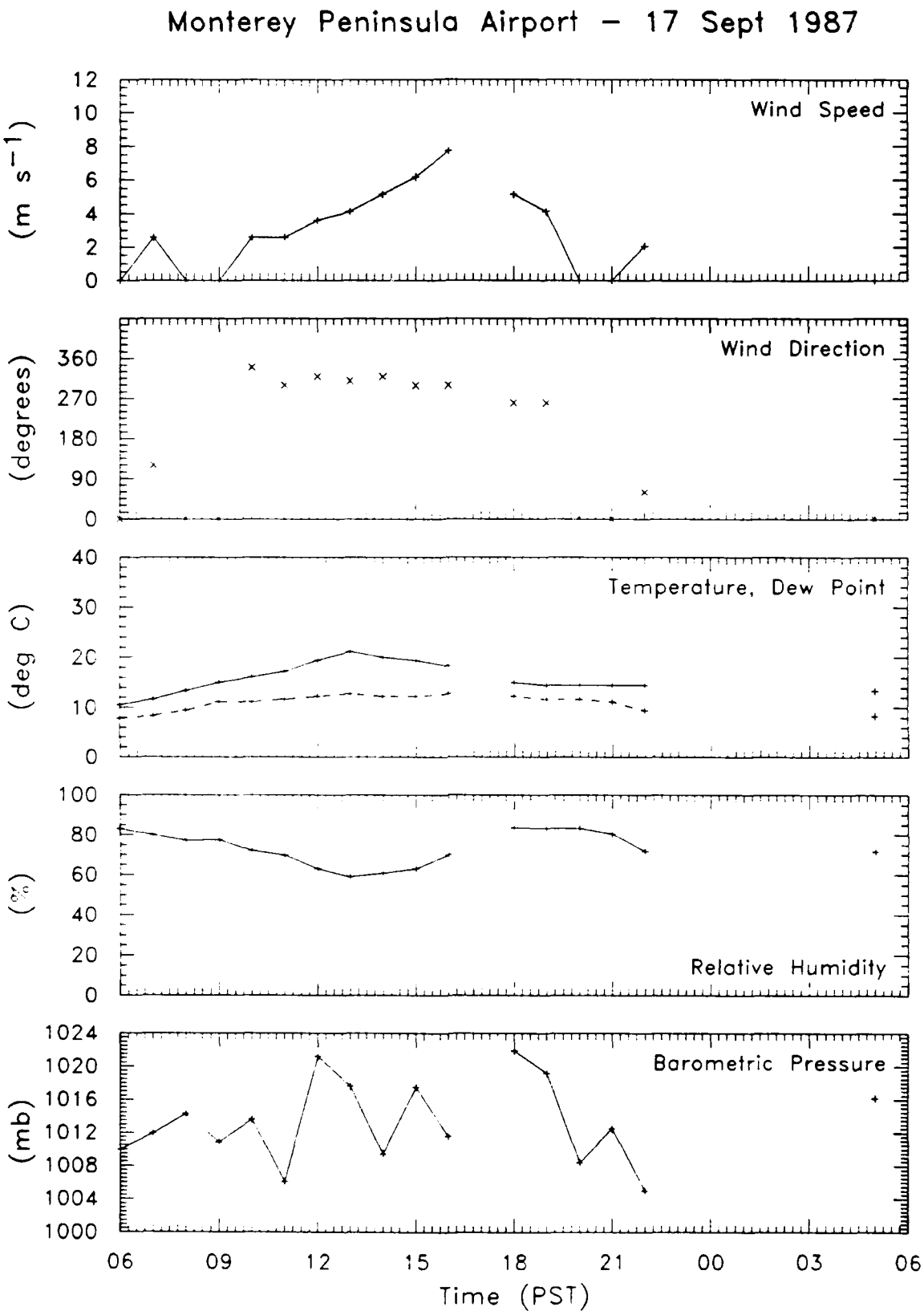

Monterey Bay Aquarium – 30 Sept 1987
Wind Speed
(m s^{-1})
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Dry-Bulb Temperature
(deg C)
18
16
14
12
10
8
6
Barometric Pressure
(mb)
1014
1012
1010
1008
1006
Shortwave Irradiance
(W m^{-2})
800
600
400
200
0
06
09
12
15
18
21
00
03
06
Time (PST)

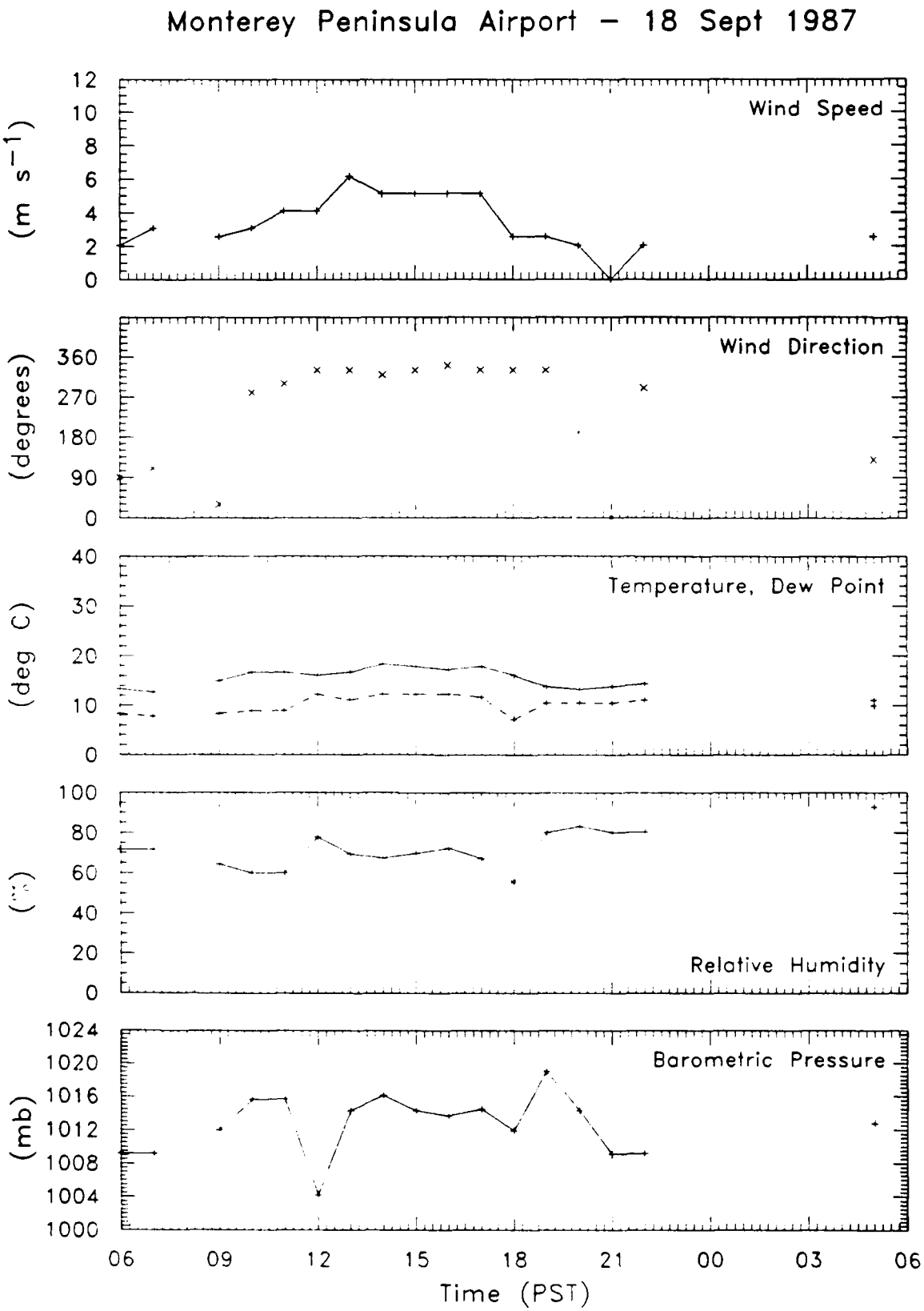
12. TIME SERIES, MONTEREY AIRPORT

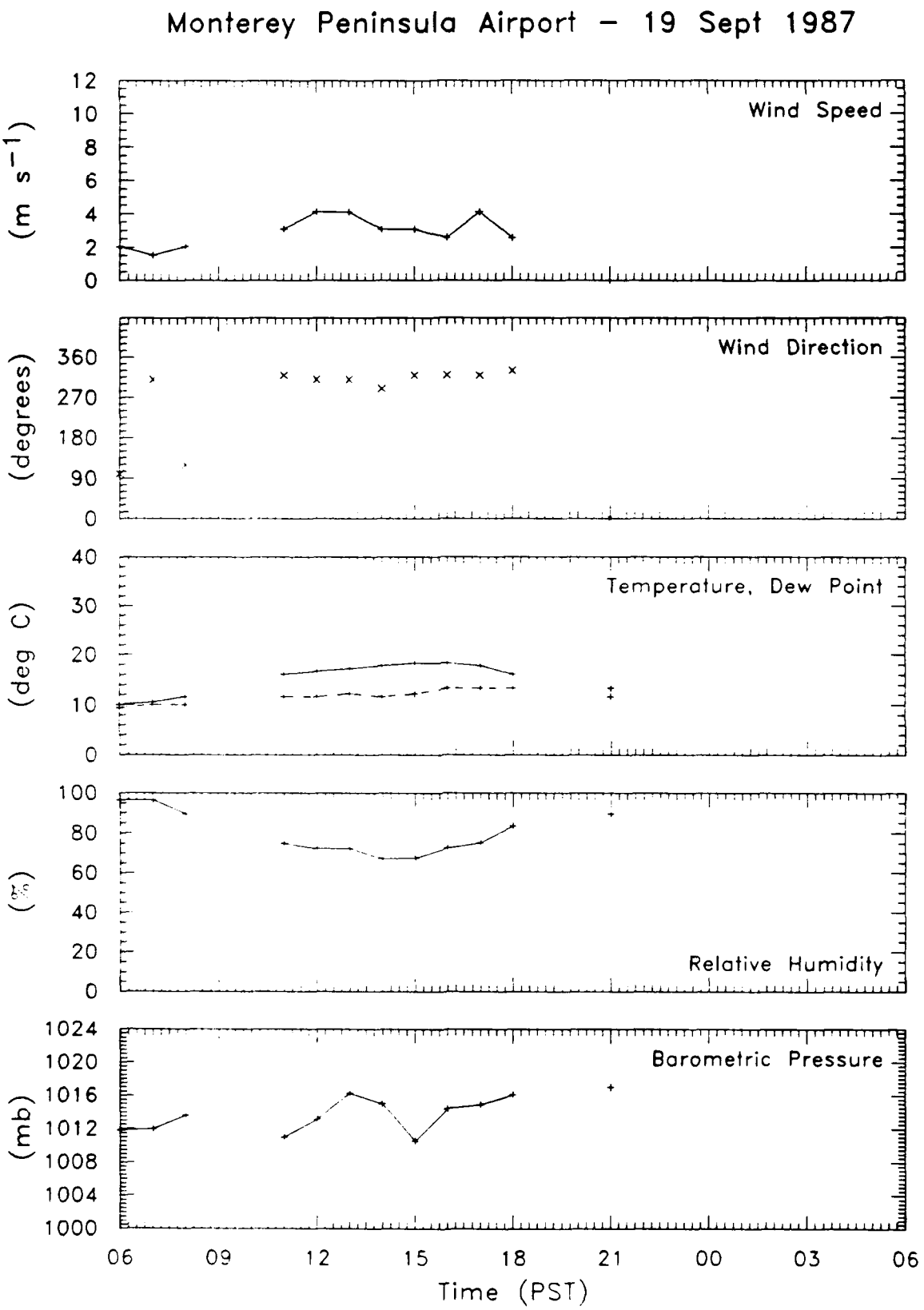
This section presents graphs of all data recorded hourly at the Monterey Airport (Fig. 1) during LASBEX.

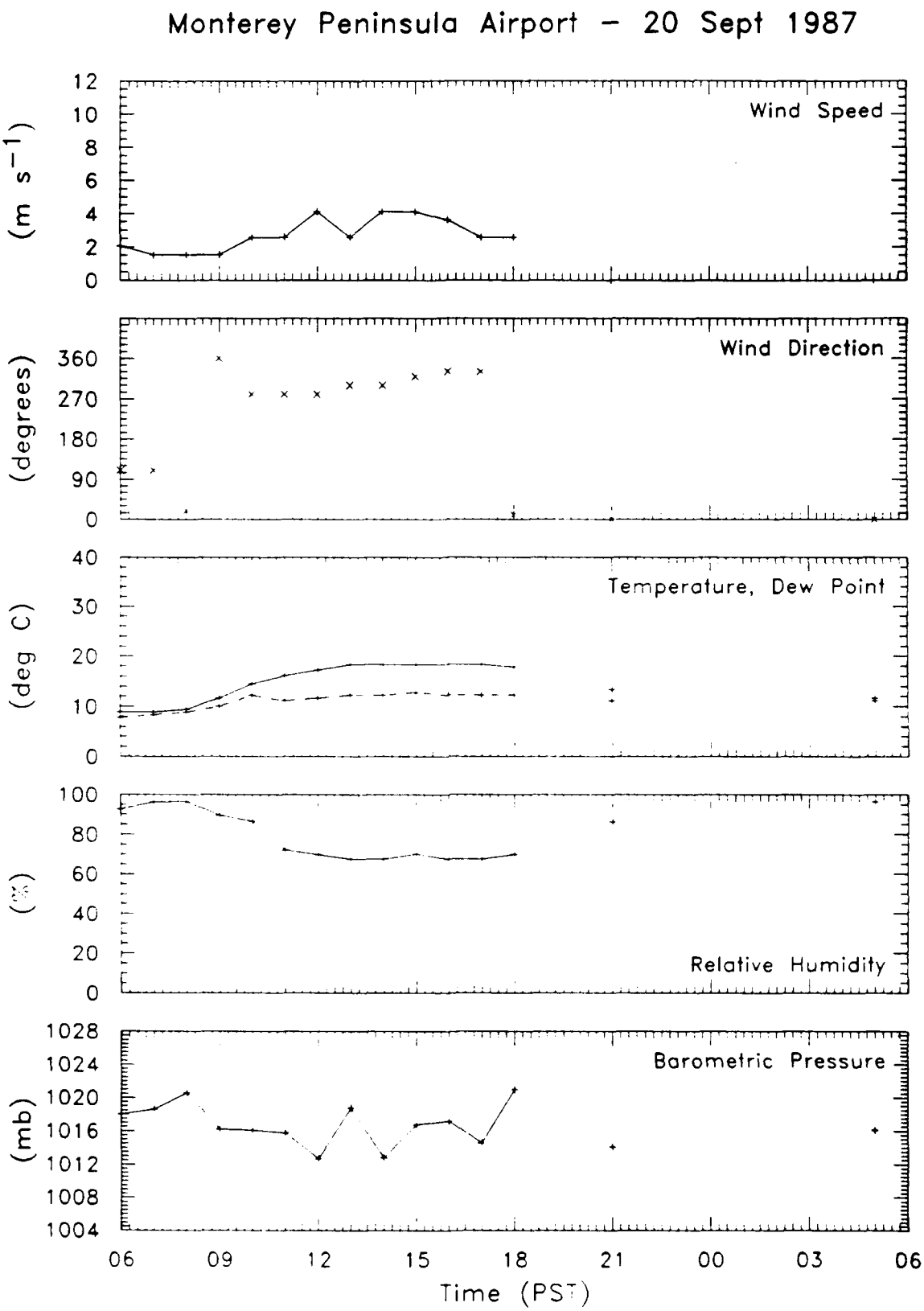

Monterey Peninsula Airport – 15 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Temperature, Dew Point
(deg C)
40
30
20
10
0
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1024
1020
1016
1012
1008
1004
1000
06
09
12
15
18
21
00
03
06
Time (PST)

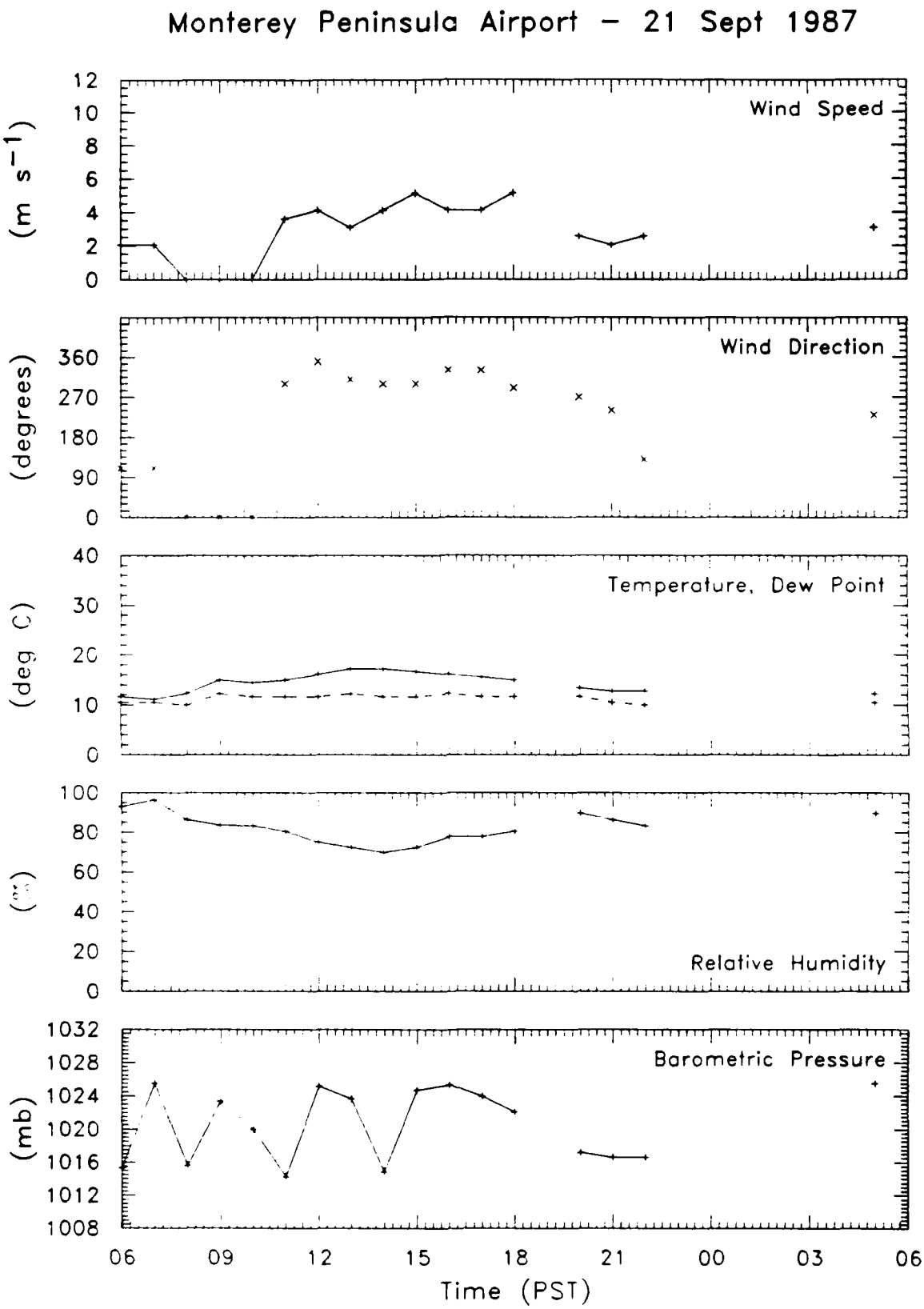

Monterey Peninsula Airport - 16 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Temperature, Dew Point
(deg C)
40
30
20
10
0
Relative Humidity
100
80
60
40
20
0
Barometric Pressure
(mb)
1020
1016
1012
1008
1004
1000
996
06
09
12
15
18
21
00
03
06
Time (PST)

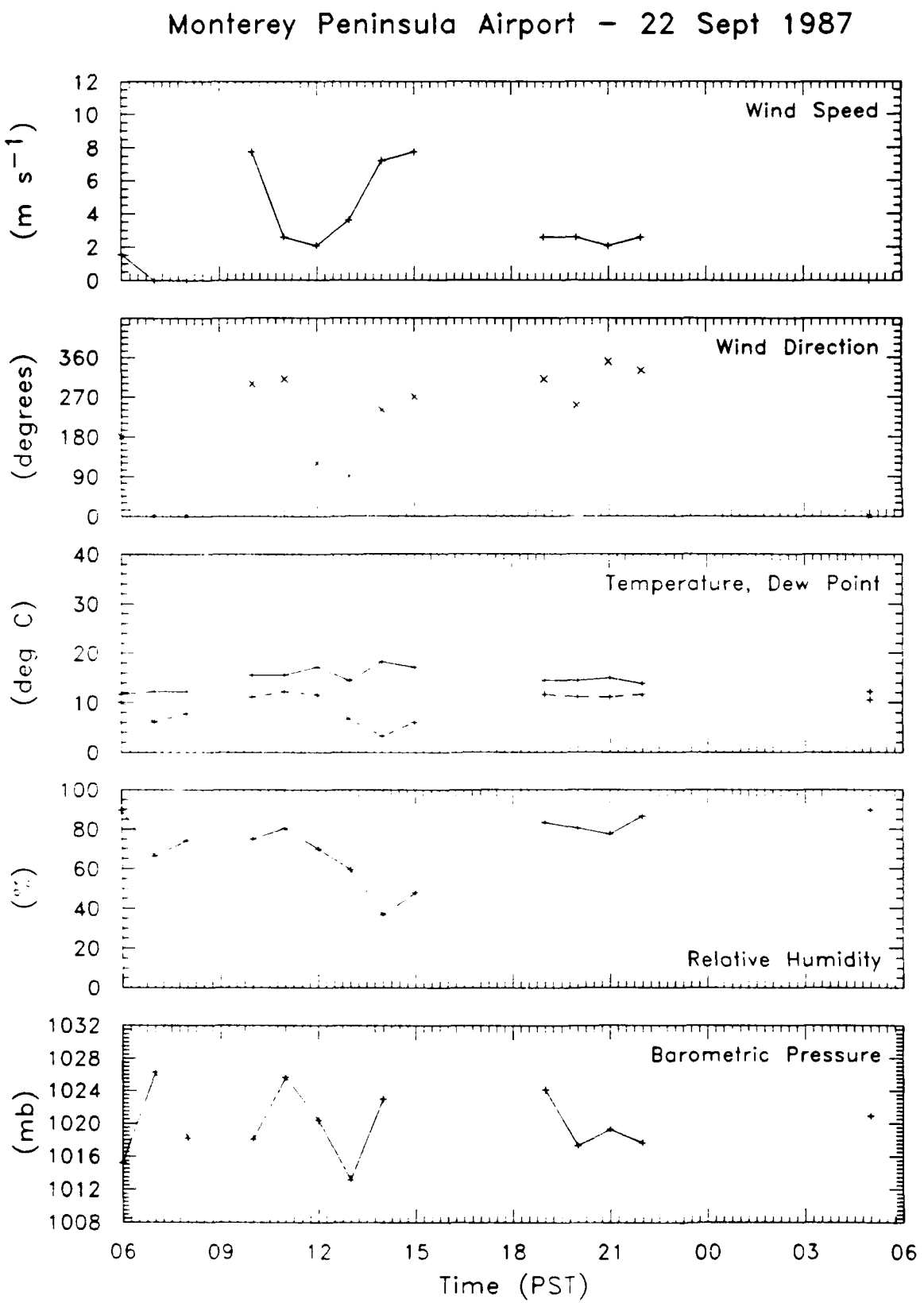

Monterey Peninsula Airport – 17 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Temperature, Dew Point
(deg C)
40
30
20
10
0
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1024
1020
1016
1012
1008
1004
1000
06
09
12
15
18
21
00
03
06
Time (PST)

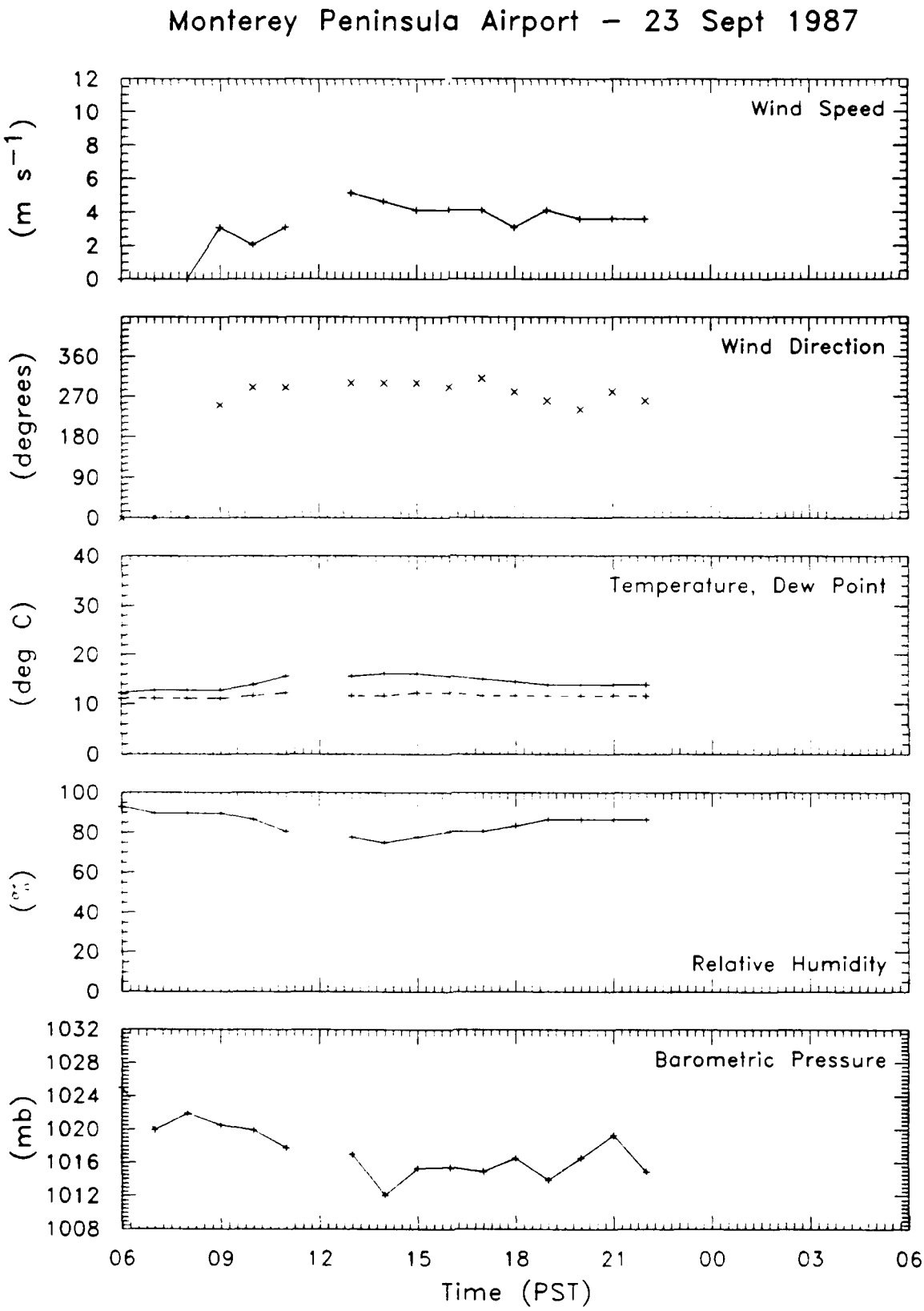

Monterey Peninsula Airport – 18 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Temperature, Dew Point
(deg C)
40
30
20
10
0
Relative Humidity
100
80
60
40
20
0
Barometric Pressure
(mb)
1024
1020
1016
1012
1008
1004
1000
06
09
12
15
18
21
00
03
06
Time (PST)

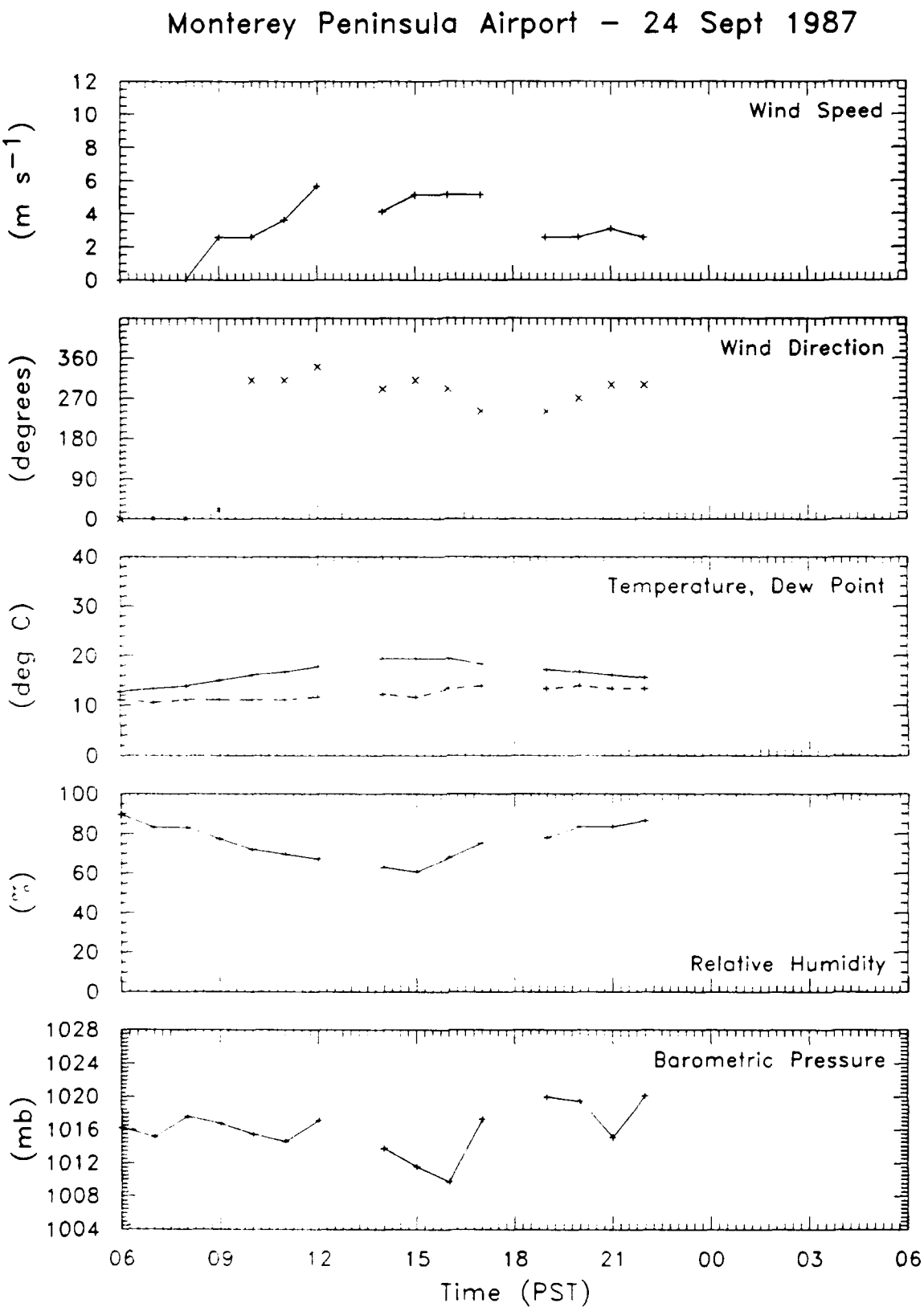

Monterey Peninsula Airport – 19 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Temperature, Dew Point
(deg C)
40
30
20
10
0
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1024
1020
1016
1012
1008
1004
1000
06
09
12
15
18
21
00
03
06
Time (PST)

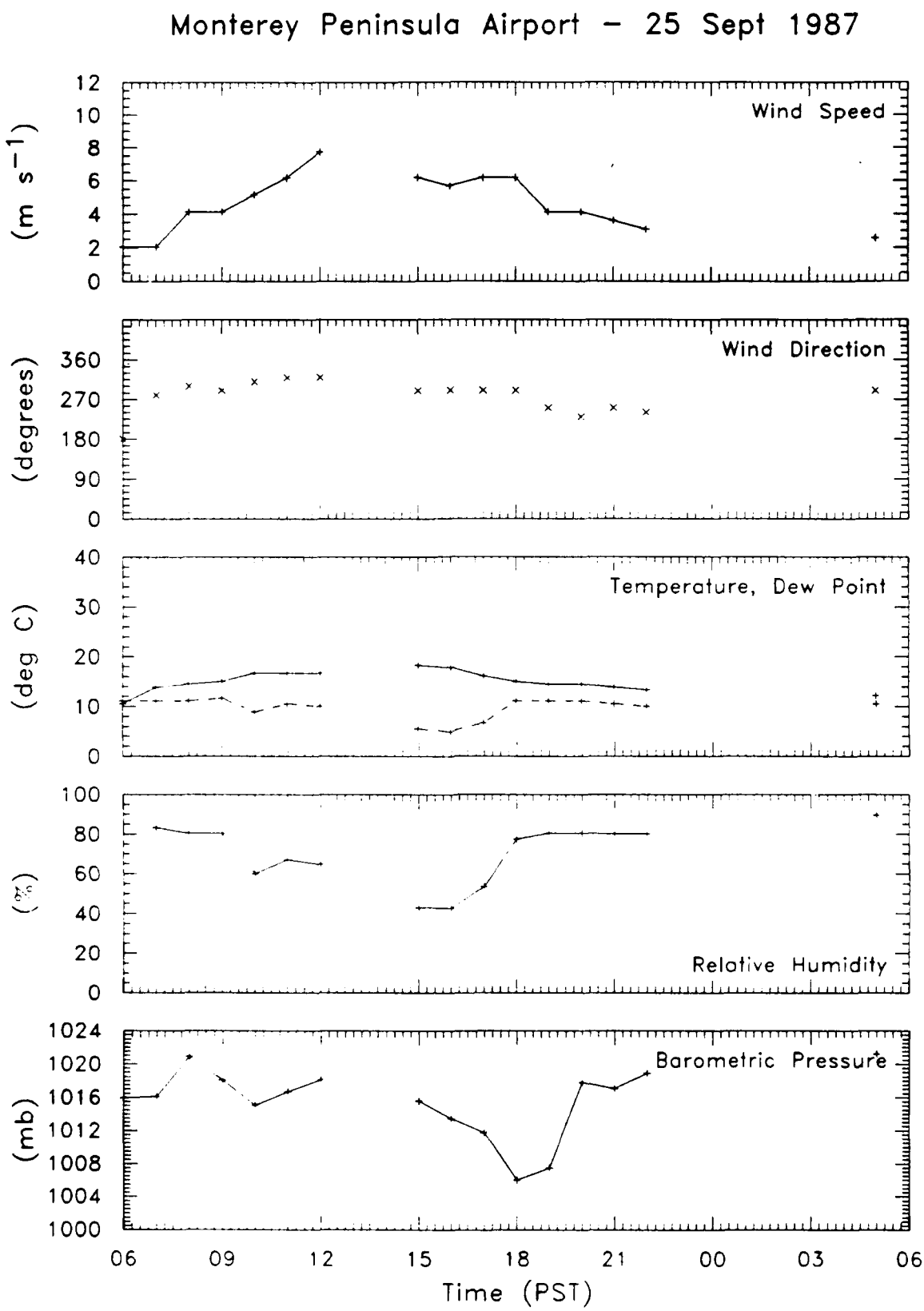

Monterey Peninsula Airport - 20 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Temperature, Dew Point
(deg C)
40
30
20
10
0
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1028
1024
1020
1016
1012
1008
1004
06
09
12
15
18
21
00
03
06
Time (PST)

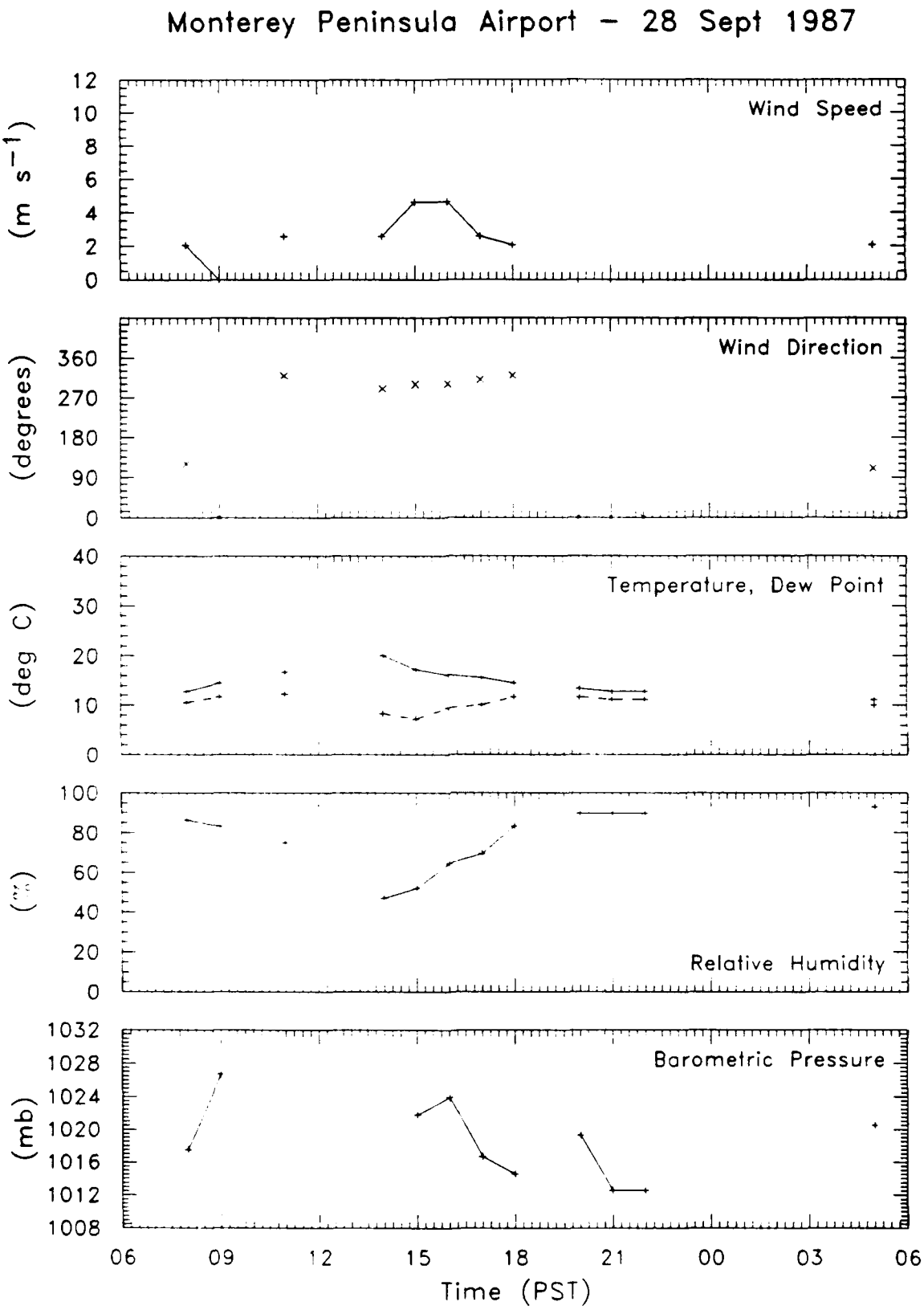

Monterey Peninsula Airport - 21 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Temperature, Dew Point
(deg C)
40
30
20
10
0
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1032
1028
1024
1020
1016
1012
1008
06
09
12
15
18
21
00
03
06
Time (PST)

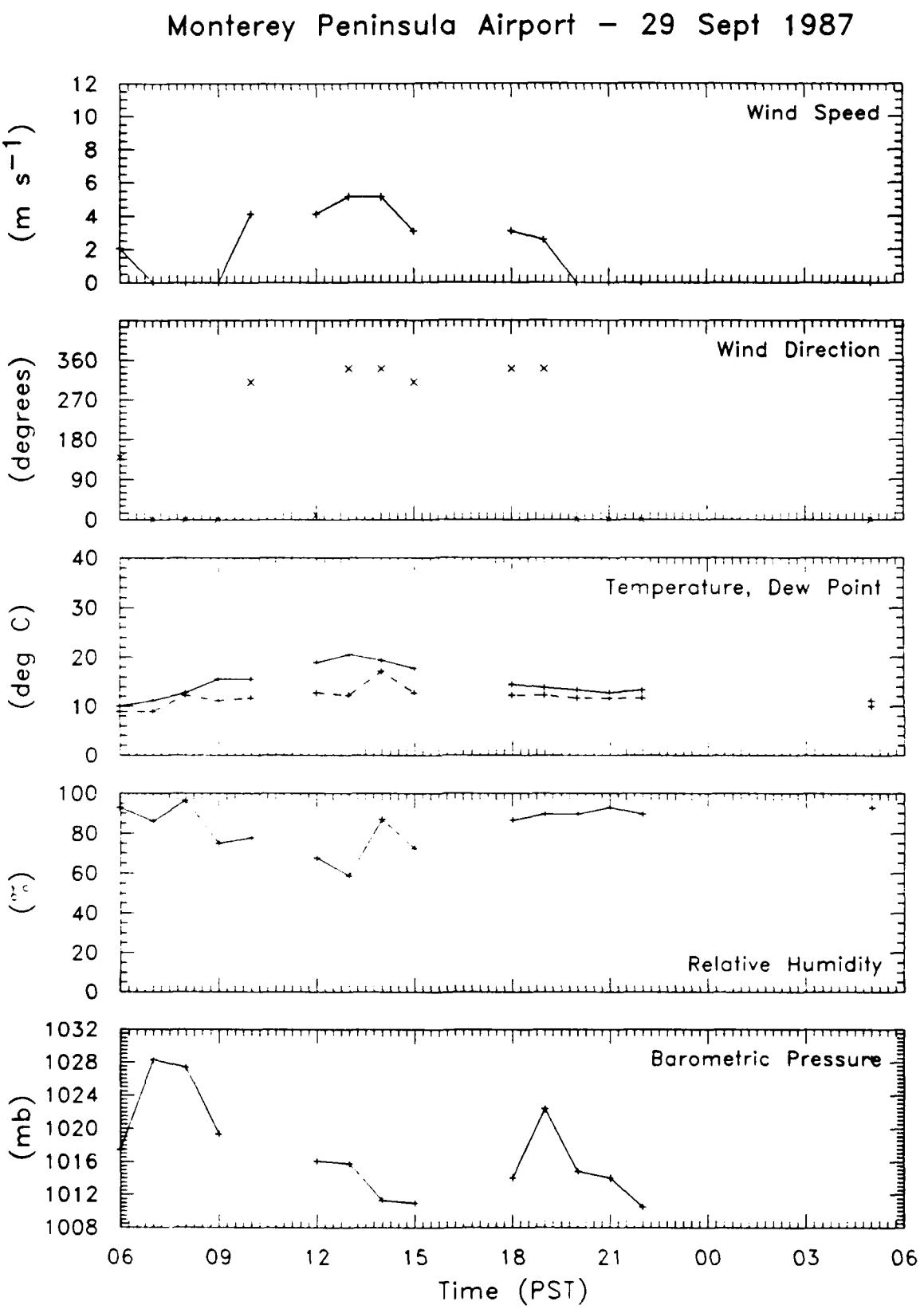

Monterey Peninsula Airport - 22 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Temperature, Dew Point
(deg C)
40
30
20
10
0
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1032
1028
1024
1020
1016
1012
1008
06
09
12
15
18
21
00
03
06
Time (PST)

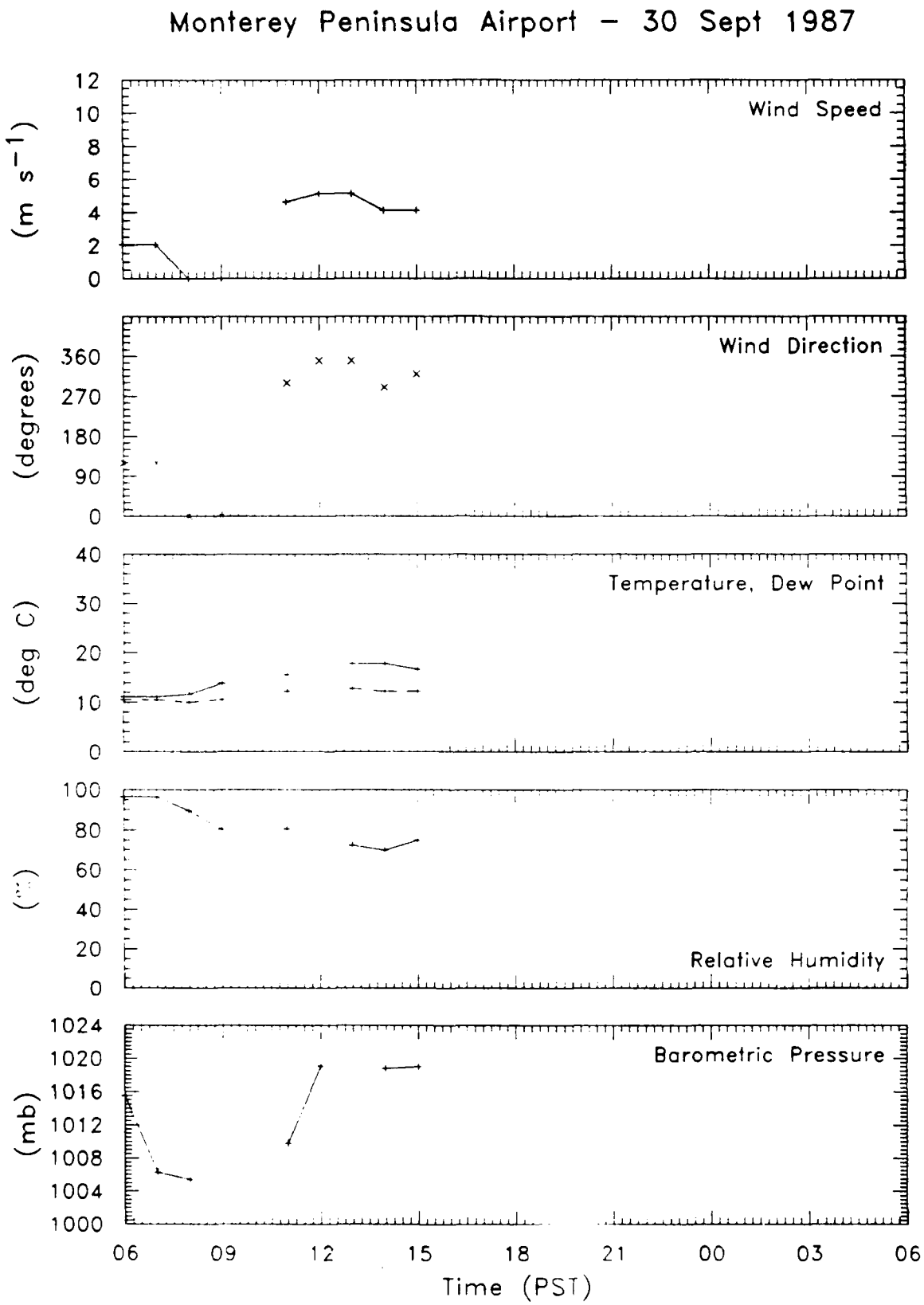

Monterey Peninsula Airport – 23 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Temperature, Dew Point
(deg C)
40
30
20
10
0
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1032
1028
1024
1020
1016
1012
1008
06
09
12
15
18
21
00
03
06
Time (PST)


Monterey Peninsula Airport - 24 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Temperature, Dew Point
(deg C)
40
30
20
10
0
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1028
1024
1020
1016
1012
1008
1004
06
09
12
15
18
21
00
03
06
Time (PST)


Monterey Peninsula Airport - 25 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Temperature, Dew Point
(deg C)
40
30
20
10
0
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1024
1020
1016
1012
1008
1004
1000
06
09
12
15
18
21
00
03
06
Time (PST)


Monterey Peninsula Airport - 28 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Temperature, Dew Point
(deg C)
40
30
20
10
0
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1032
1028
1024
1020
1016
1012
1008
06
09
12
15
18
21
00
03
06
Time (PST)

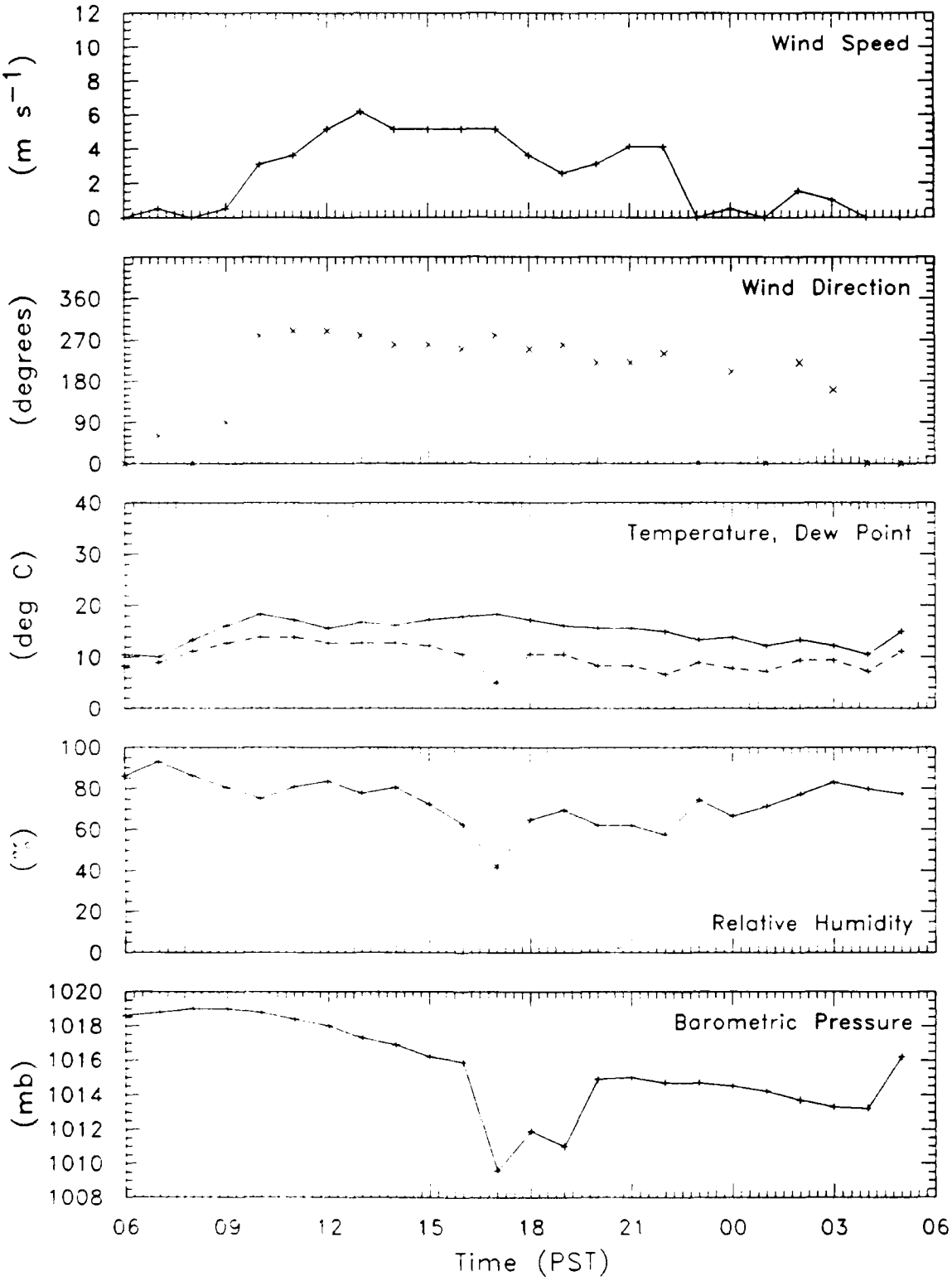

Monterey Peninsula Airport – 29 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Temperature, Dew Point
(deg C)
40
30
20
10
0
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1032
1028
1024
1020
1016
1012
1008
06
09
12
15
18
21
00
03
06
Time (PST)


Monterey Peninsula Airport - 30 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Temperature, Dew Point
(deg C)
40
30
20
10
0
Relative Humidity
100
80
60
40
20
0
Barometric Pressure
(mb)
1024
1020
1016
1012
1008
1004
1000
06
09
12
15
18
21
00
03
06
Time (PST)

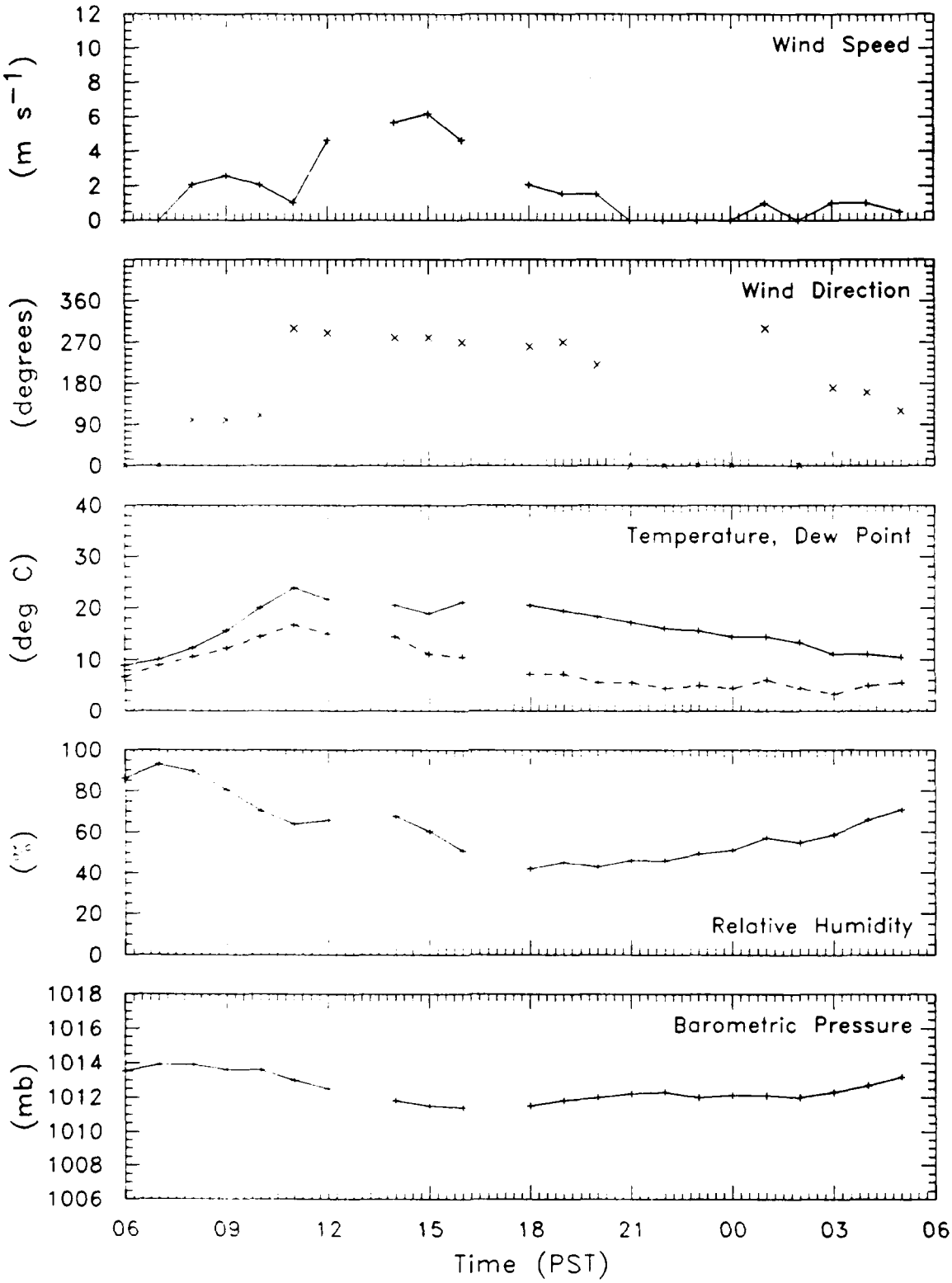
13. TIME SERIES, FRITZSCHE ARMY AIRFIELD--FT. ORD

This section presents graphs of all data recorded hourly at Fritzsche Army Airfield at Ft. Ord (Fig. 1) during LASBEX.

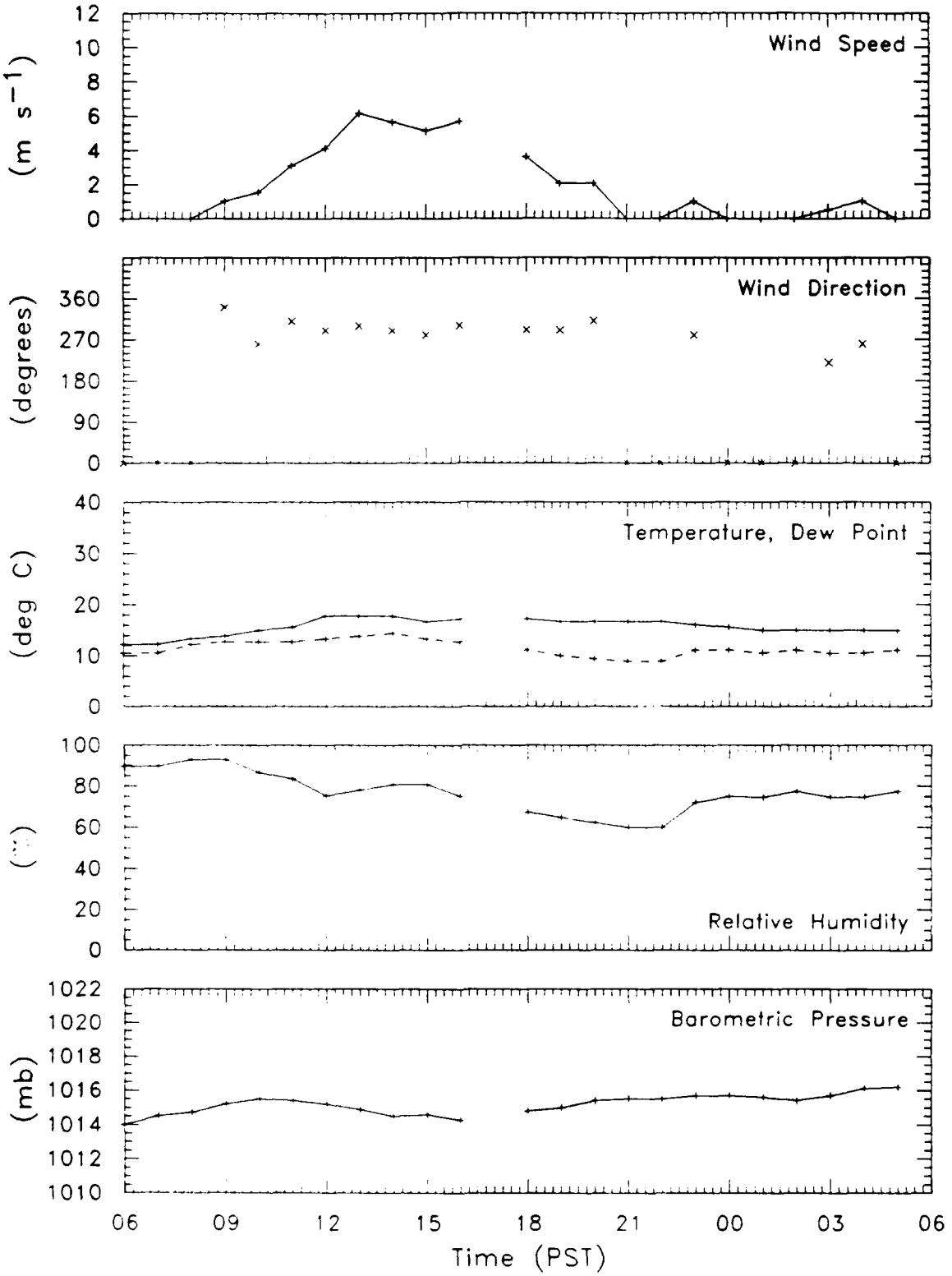
Fritzsche Army Airfield (Ft. Ord) – 15 Sept 1987



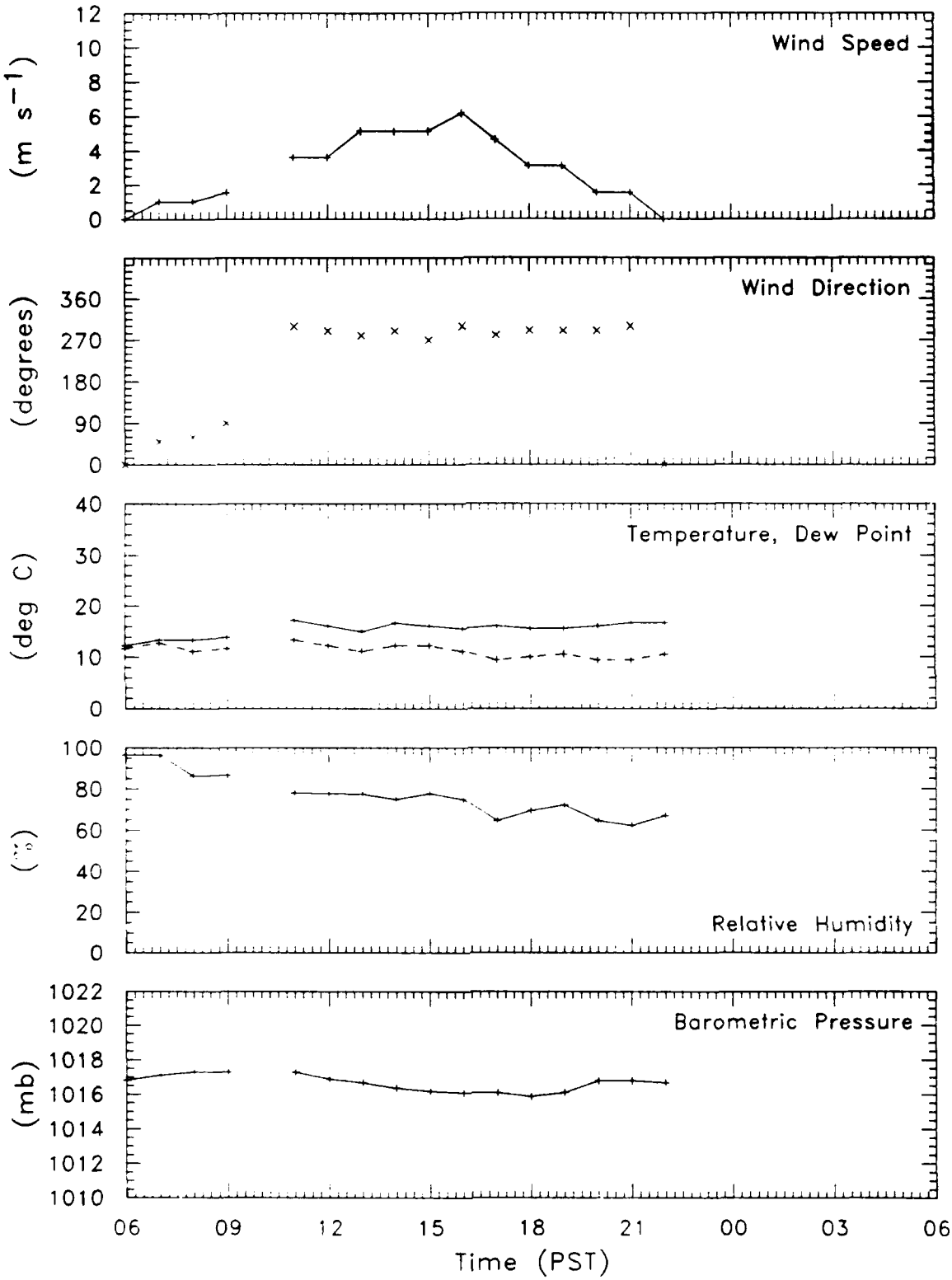
Fritzsche Army Airfield (Ft. Ord) – 16 Sept 1987

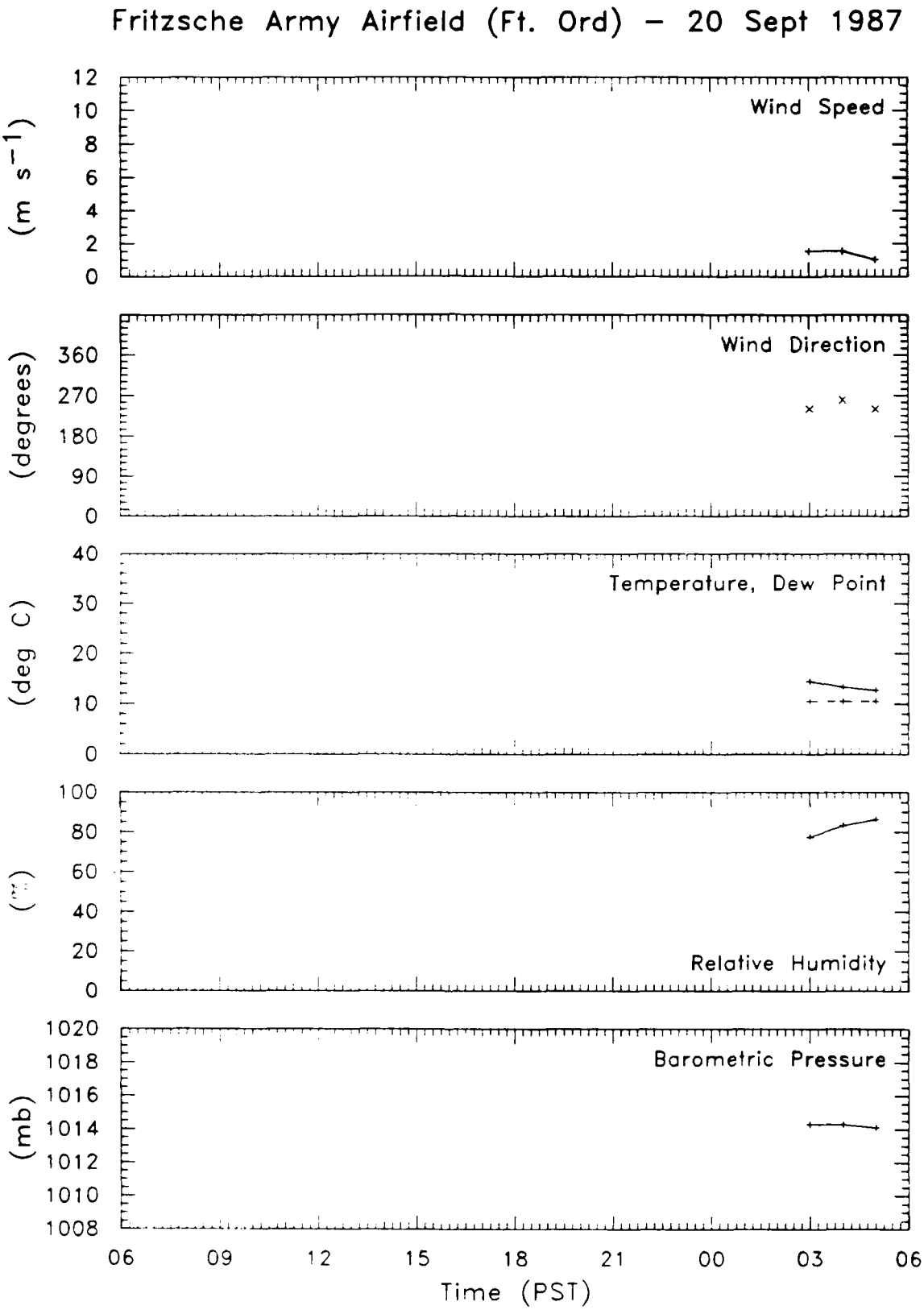


Fritzsche Army Airfield (Ft. Ord) – 17 Sept 1987

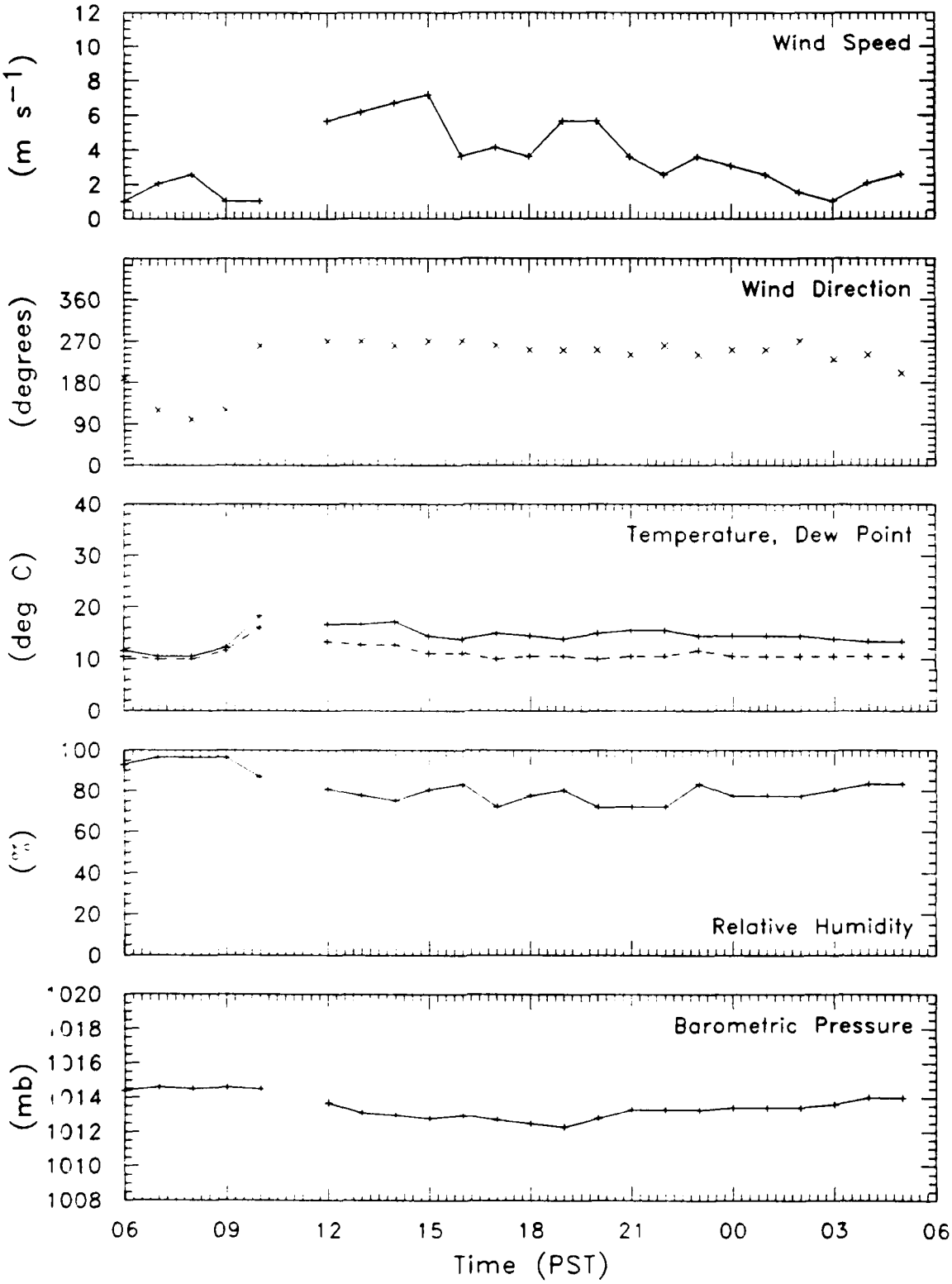


Fritzsche Army Airfield (Ft. Ord) – 18 Sept 1987

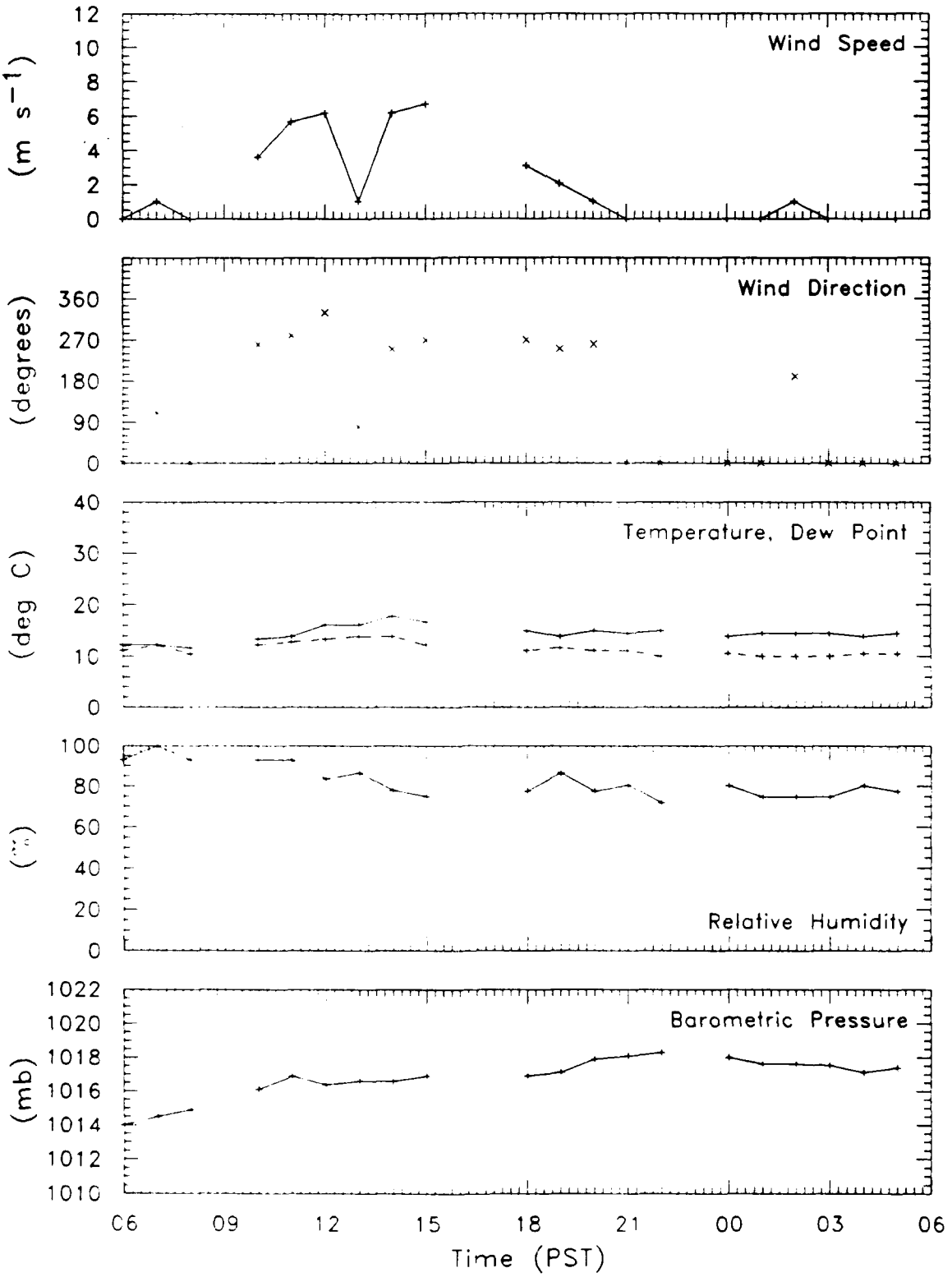



Fritzsche Army Airfield (Ft. Ord) – 20 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Temperature, Dew Point
(deg C)
40
30
20
10
0
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1020
1018
1016
1014
1012
1010
1008
06
09
12
15
18
21
00
03
06
Time (PST)

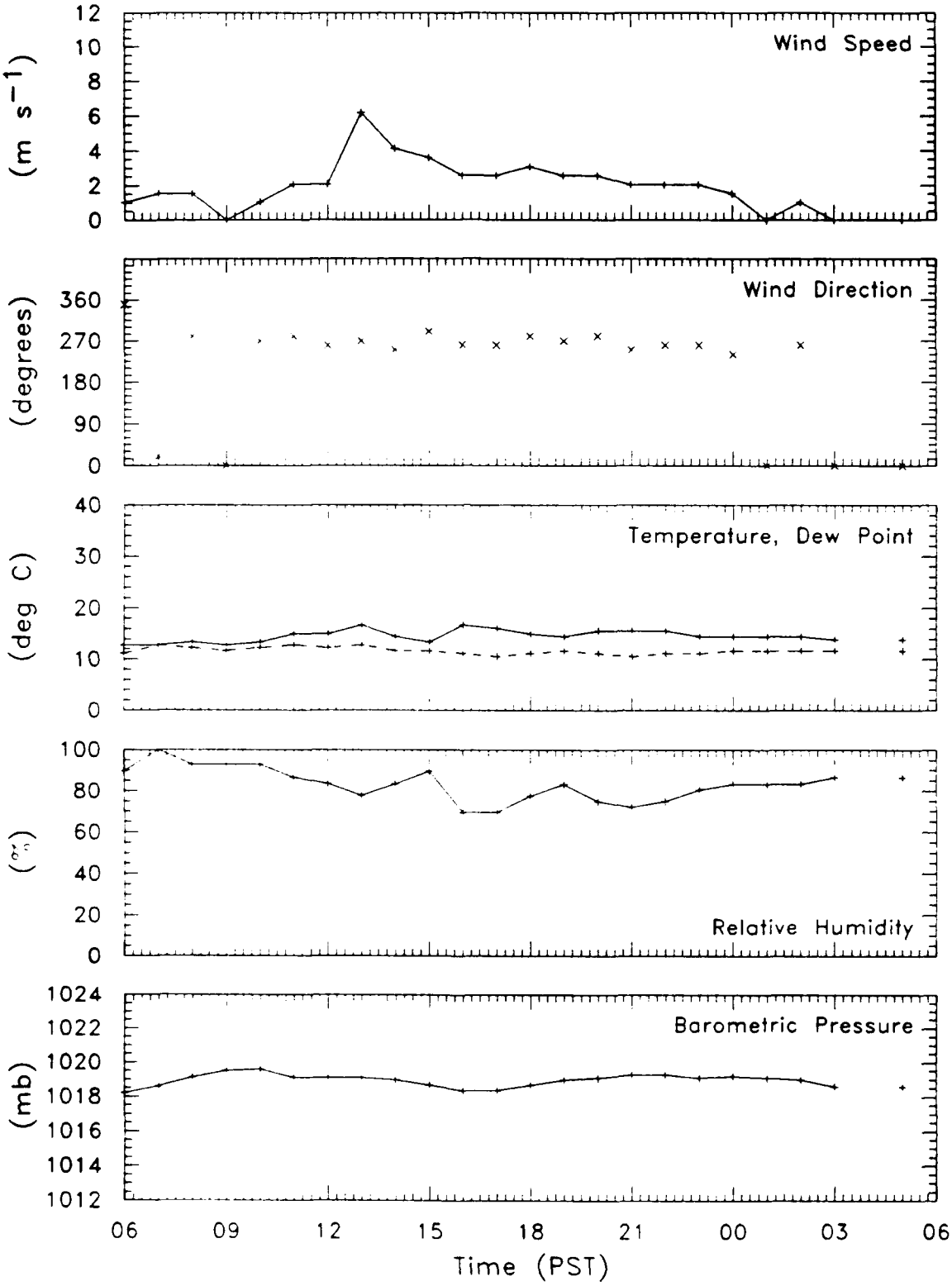
Fritzsche Army Airfield (Ft. Ord) – 21 Sept 1987



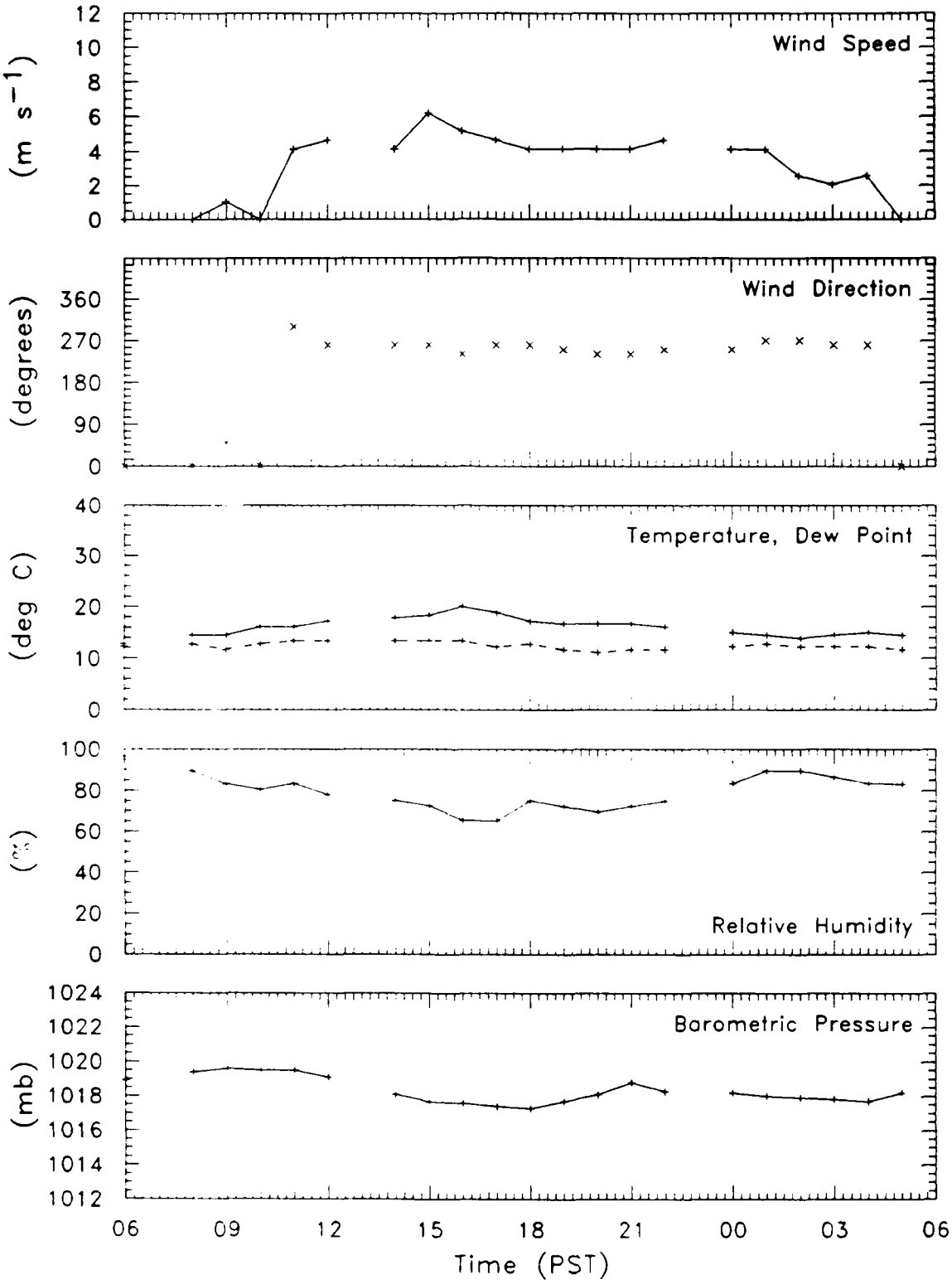
Fritzsche Army Airfield (Ft. Ord) - 22 Sept 1987



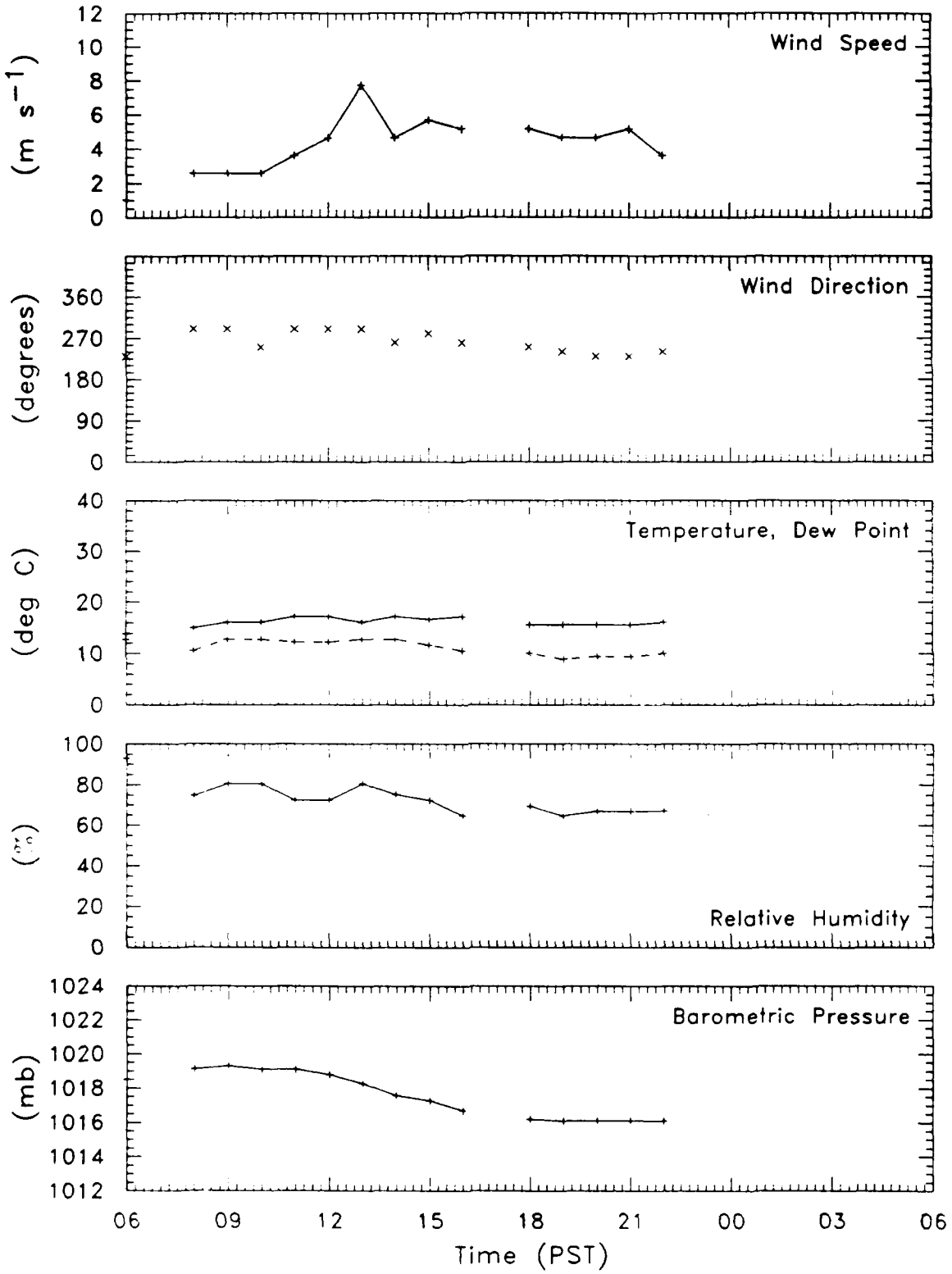
Fritzsche Army Airfield (Ft. Ord) – 23 Sept 1987



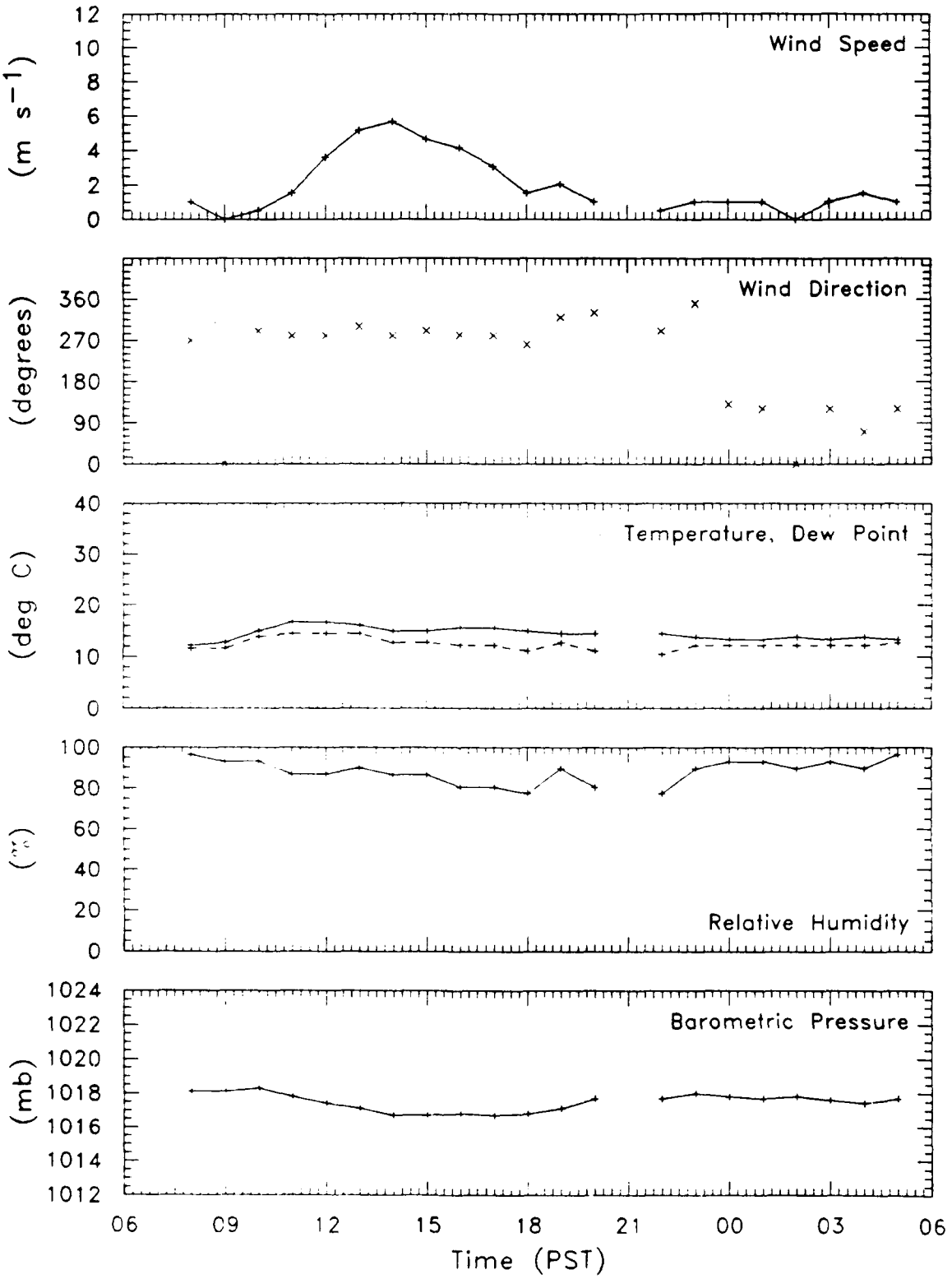
Fritzsche Army Airfield (Ft. Ord) – 24 Sept 1987



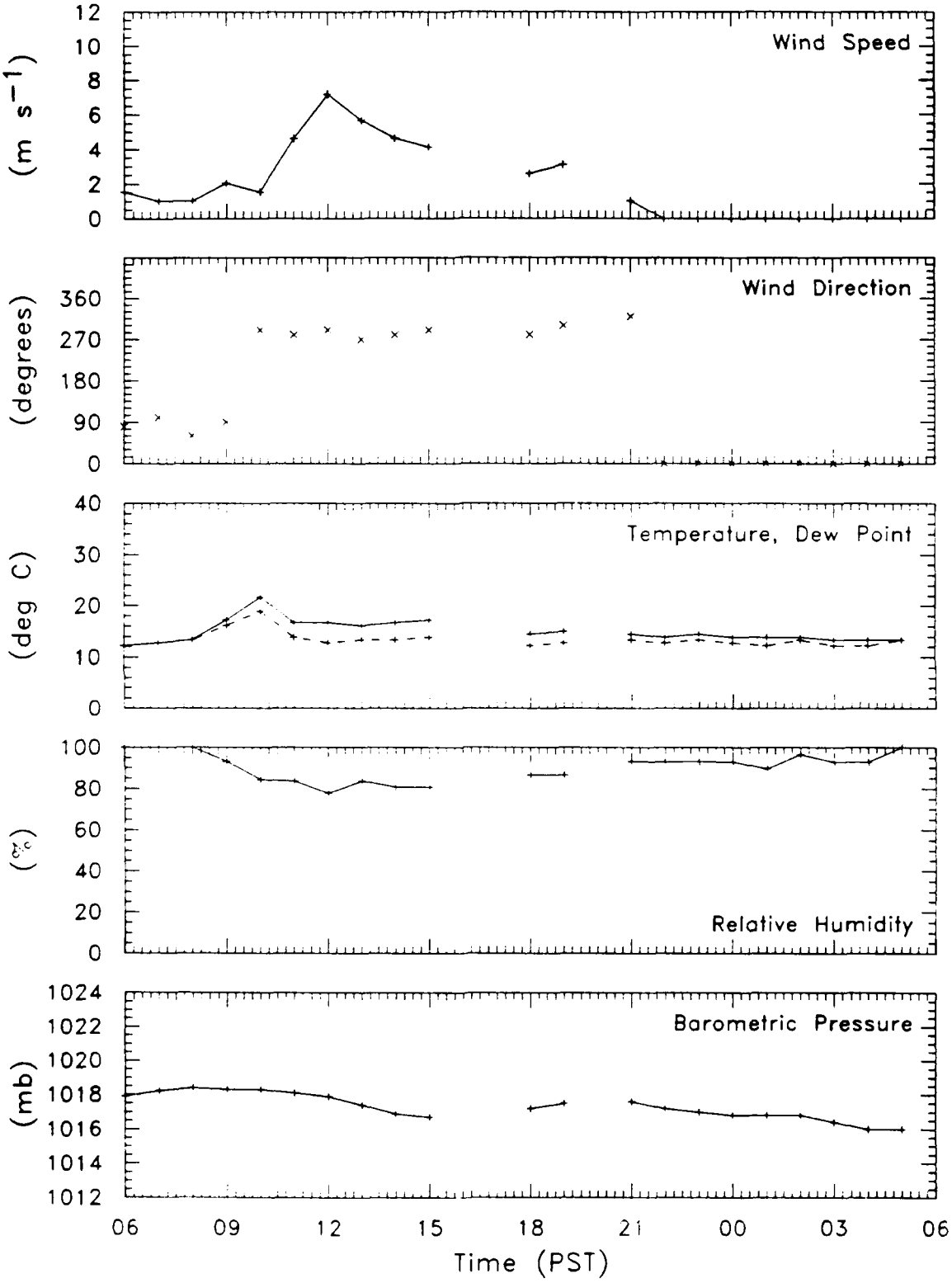
Fritzsche Army Airfield (Ft. Ord) – 25 Sept 1987



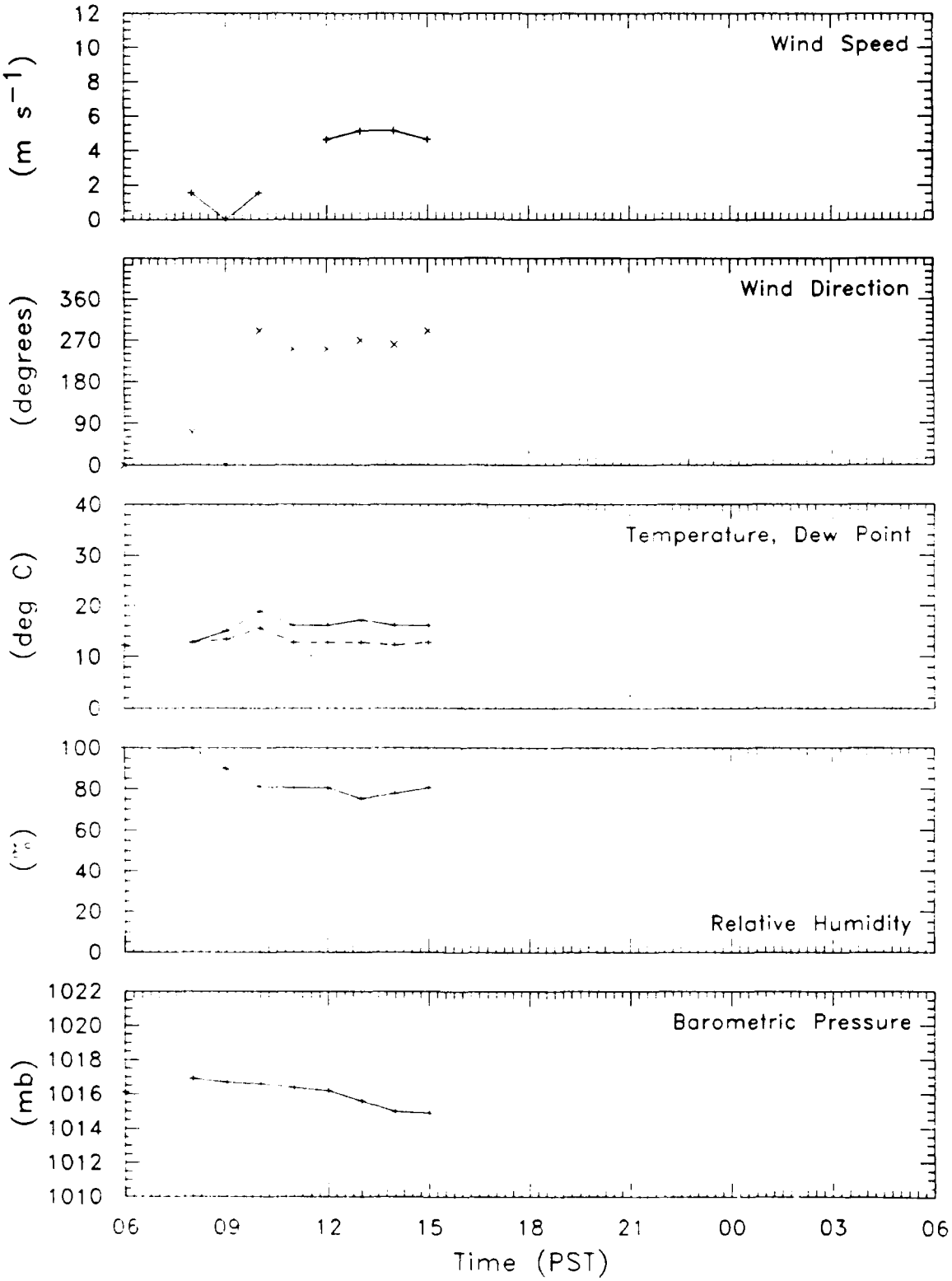
Fritzsche Army Airfield (Ft. Ord) – 28 Sept 1987



Fritzsche Army Airfield (Ft. Ord) – 29 Sept 1987

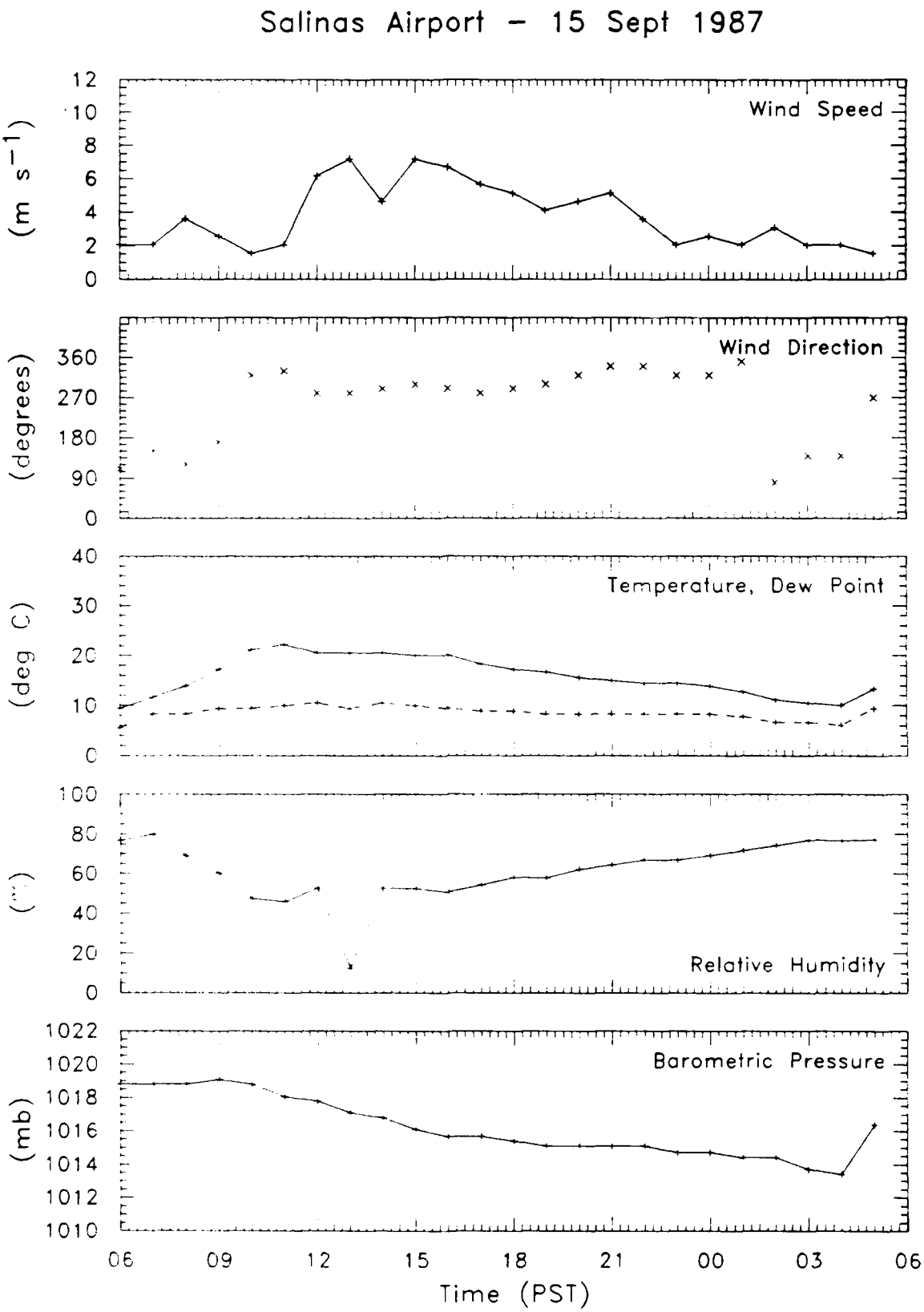


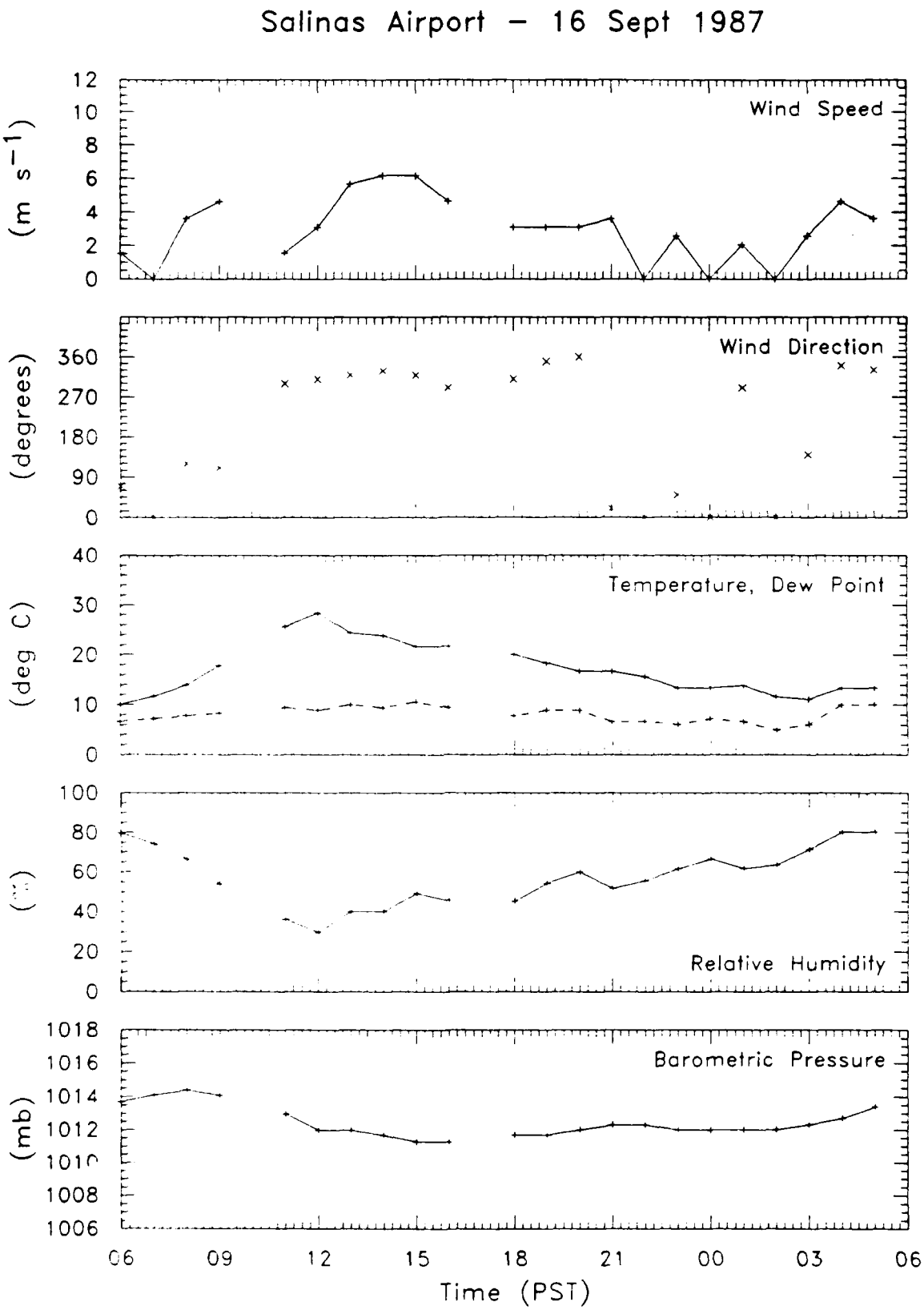
Fritzsche Army Airfield (Ft. Ord) – 30 Sept 1987

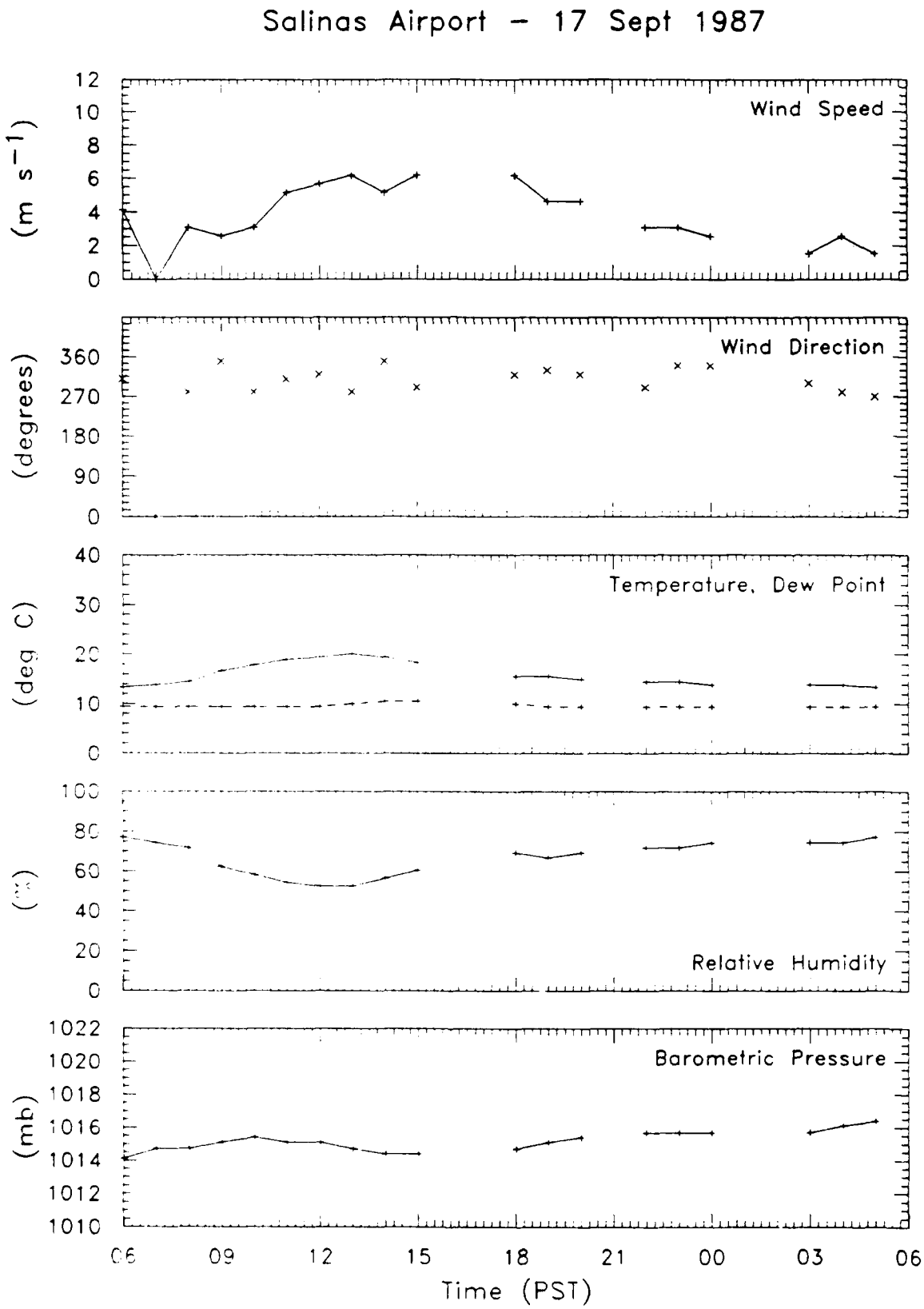


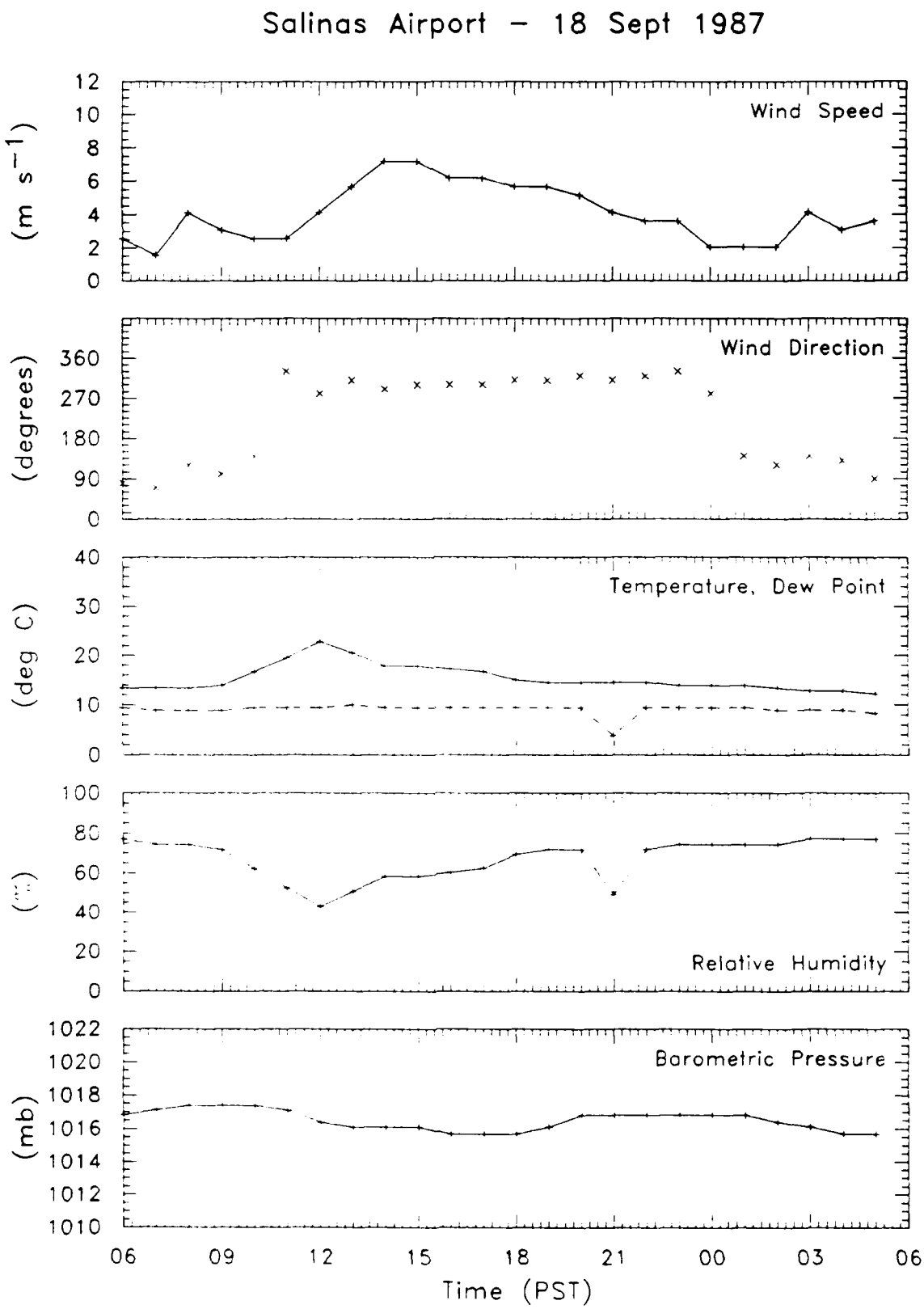
14. TIME SERIES, SALINAS MUNICIPAL AIRPORT

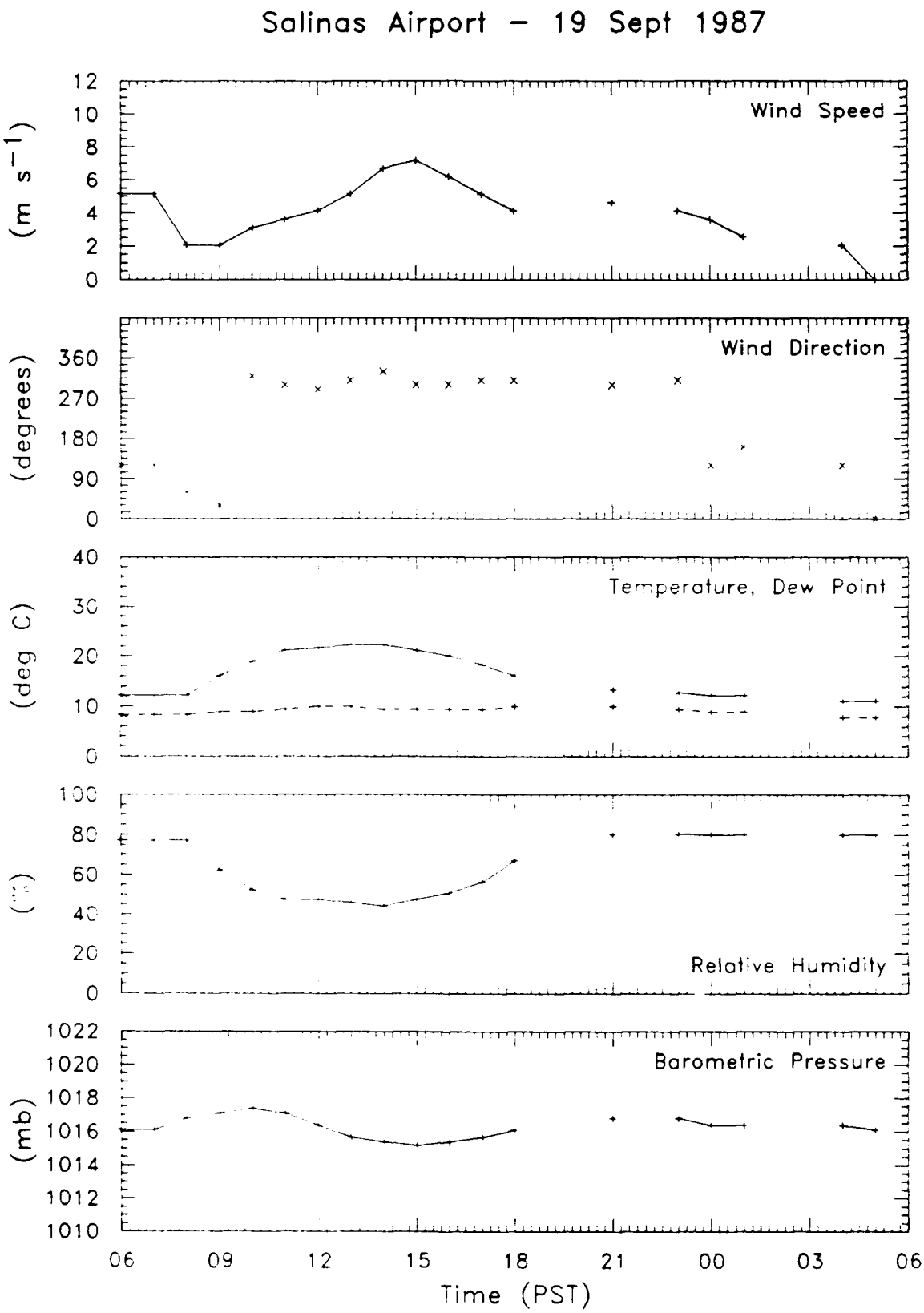
This section presents graphs of all data recorded hourly at the Salinas Municipal Airport (Fig. 1) during LASBEX.

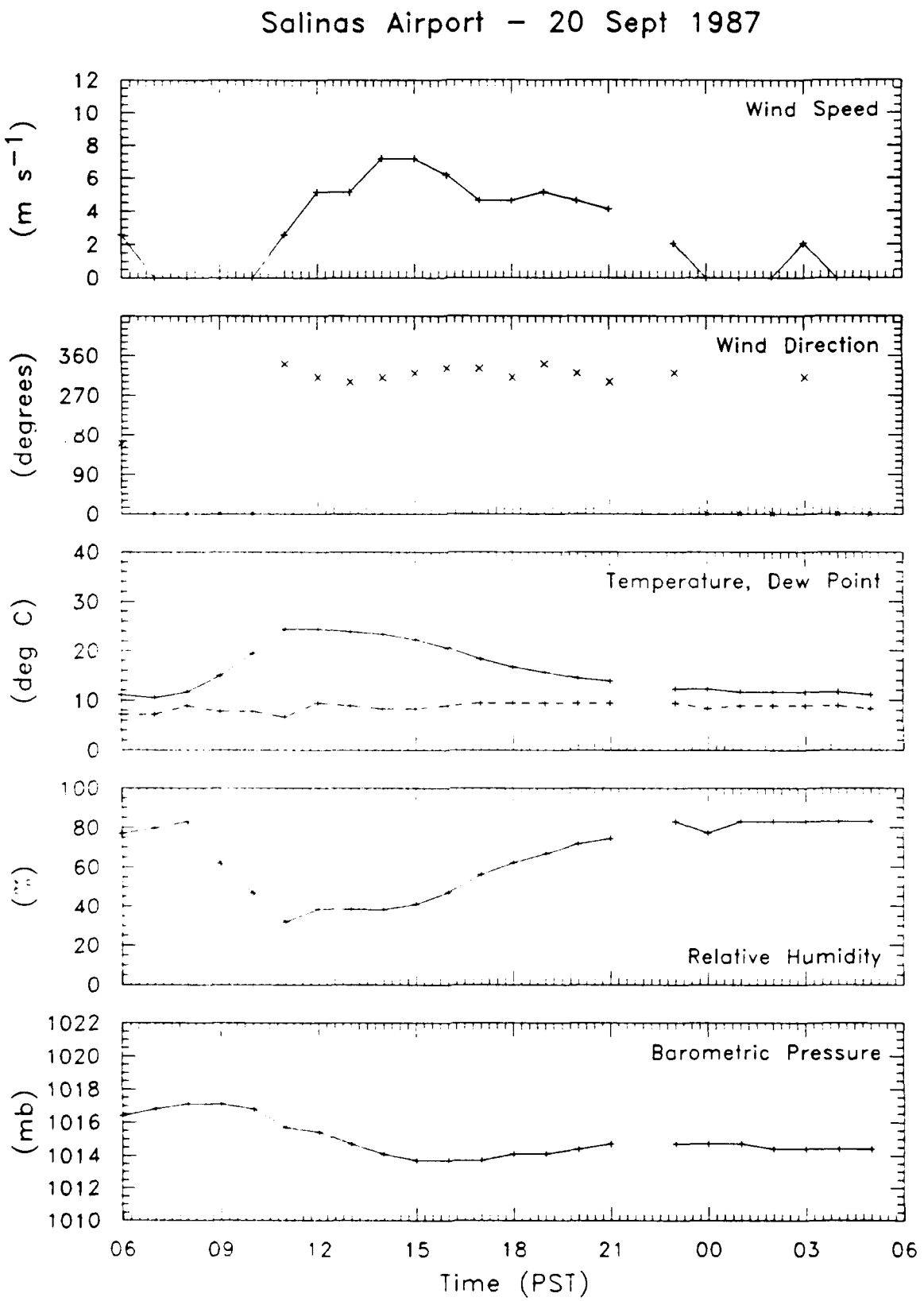

Salinas Airport - 15 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Temperature, Dew Point
(deg C)
40
30
20
10
0
Relative Humidity
100
80
60
40
20
0
Barometric Pressure
(mb)
1022
1020
1018
1016
1014
1012
1010
06
09
12
15
18
21
00
03
06
Time (PST)

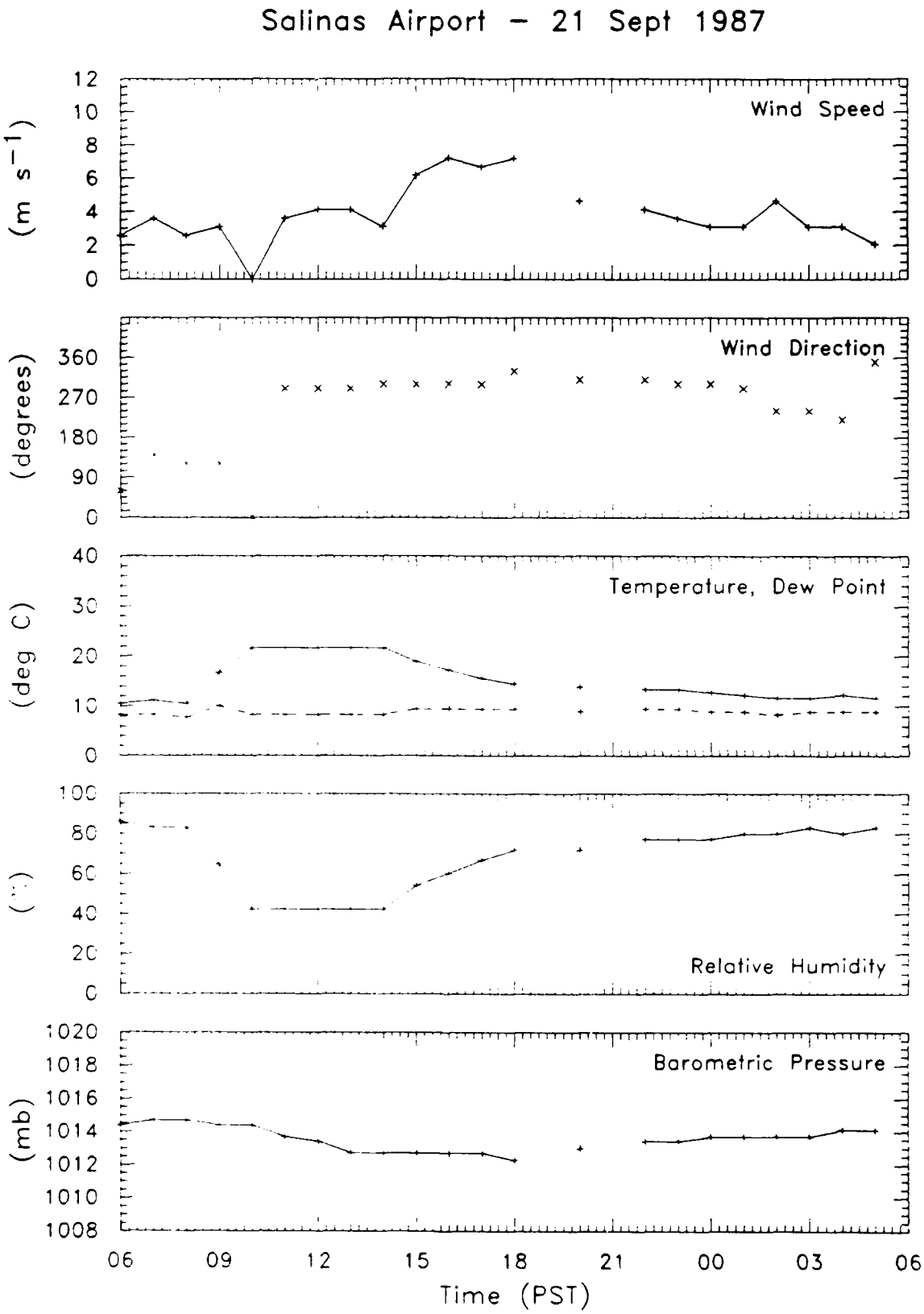

Salinas Airport – 16 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Temperature, Dew Point
(deg C)
40
30
20
10
0
Relative Humidity
100
80
60
40
20
0
Barometric Pressure
(mb)
1018
1016
1014
1012
1008
1006
06
09
12
15
18
21
00
03
06
Time (PST)

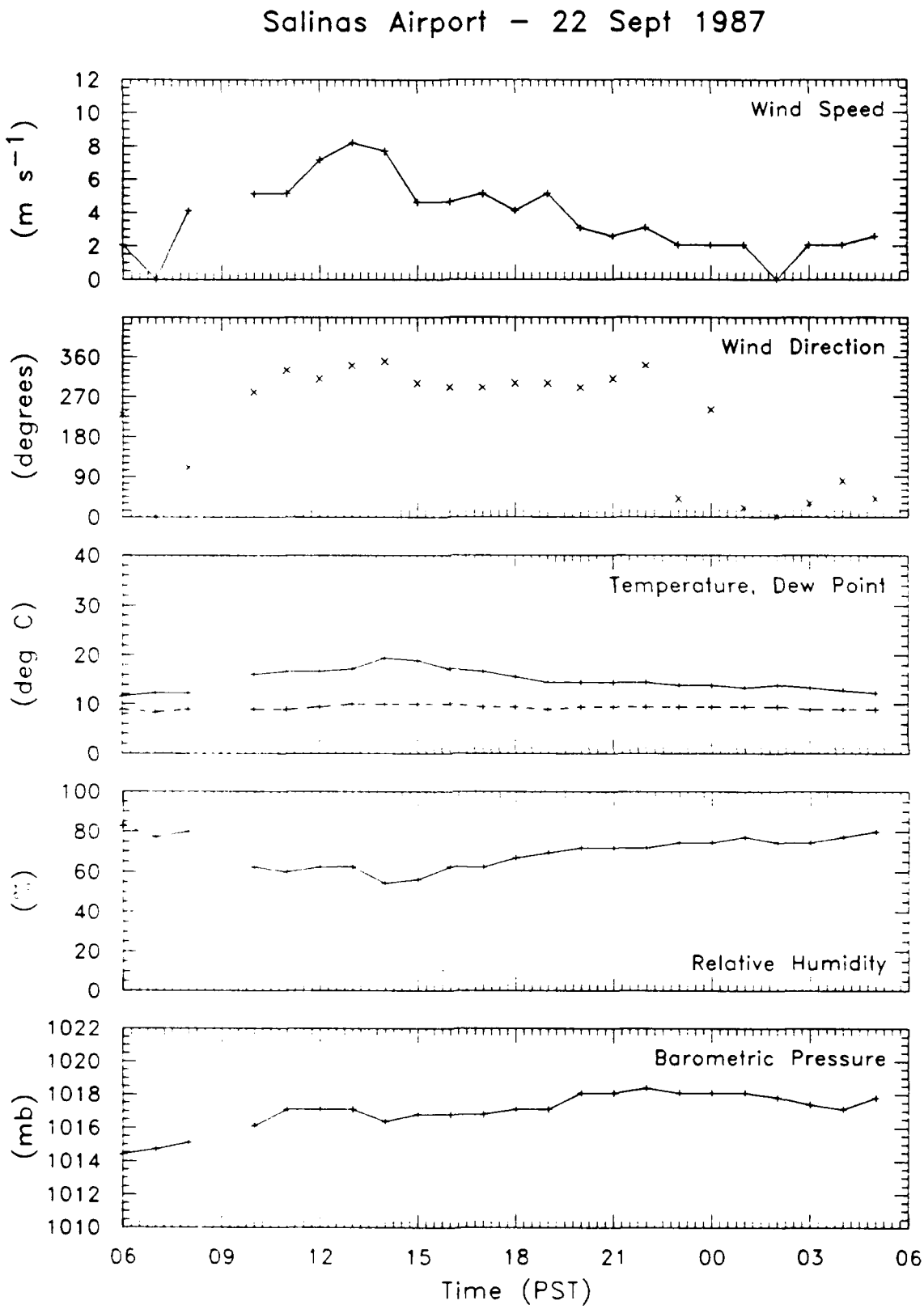

Salinas Airport - 17 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Temperature, Dew Point
(deg C)
40
30
20
10
0
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1022
1020
1018
1016
1014
1012
1010
06
09
12
15
18
21
00
03
06
Time (PST)

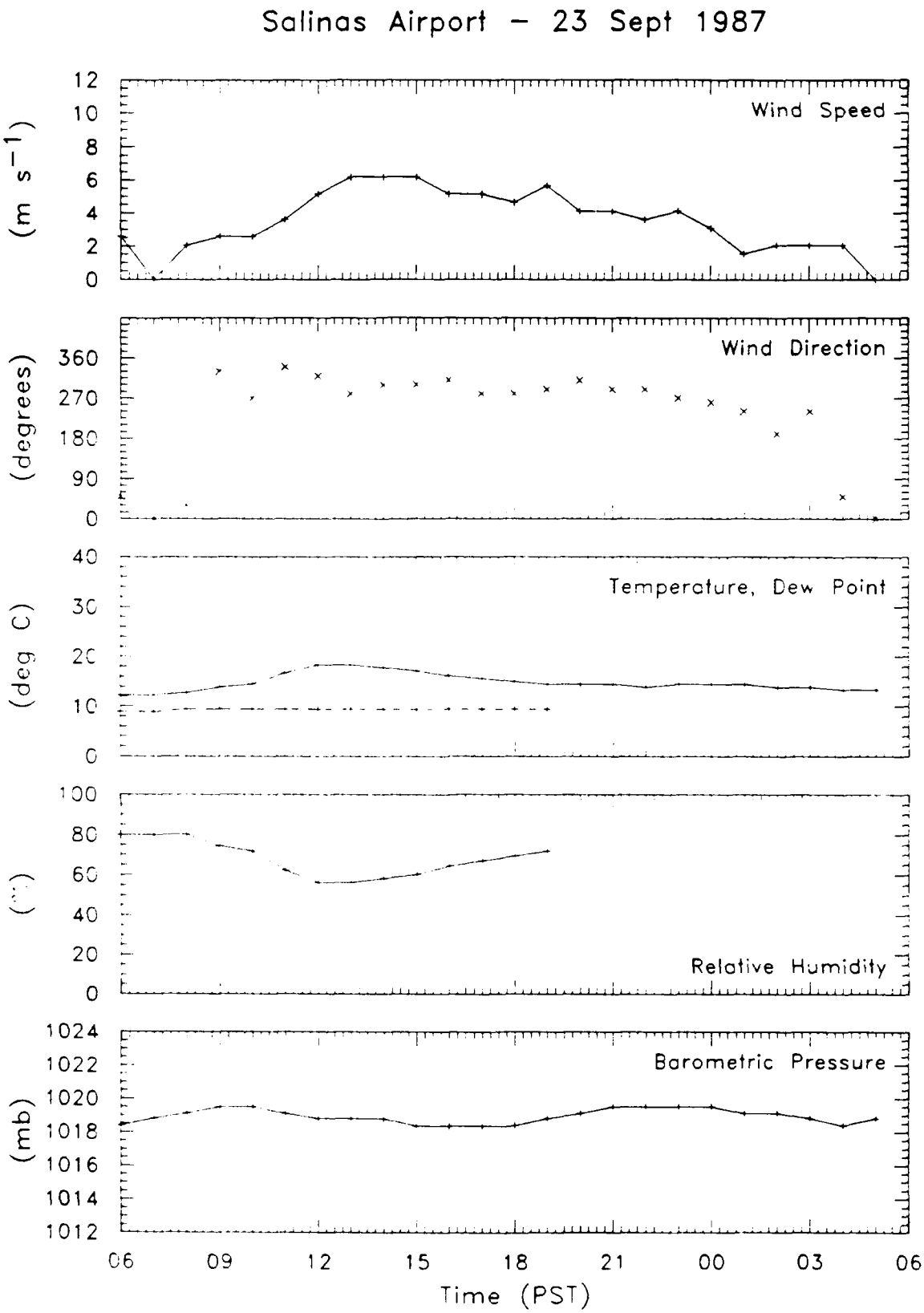

Salinas Airport - 18 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Temperature, Dew Point
(deg C)
40
30
20
10
0
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1022
1020
1018
1016
1014
1012
1010
06
09
12
15
18
21
00
03
06
Time (PST)

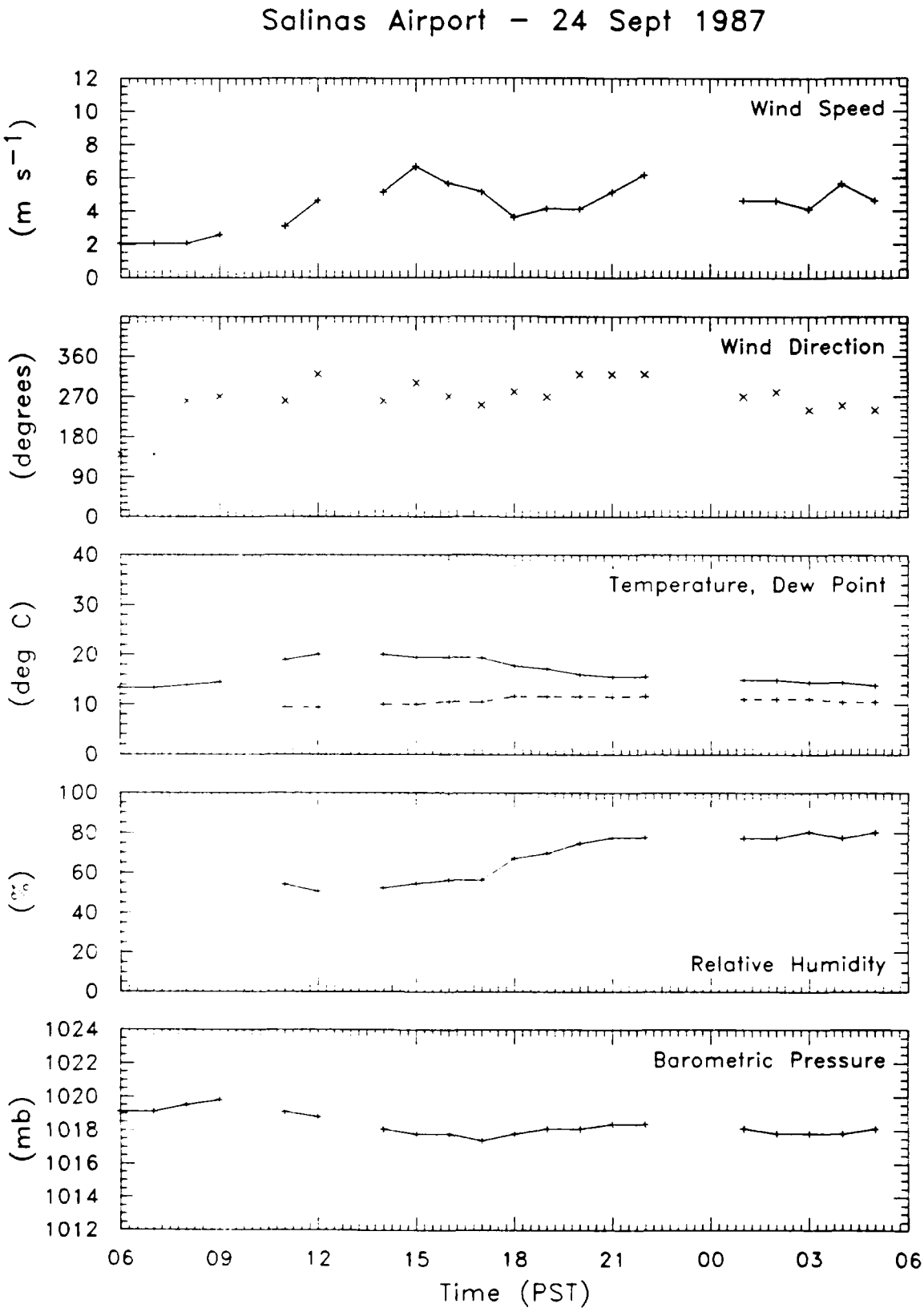

Salinas Airport – 19 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Temperature, Dew Point
(deg C)
40
30
20
10
0
Relative Humidity
100
80
60
40
20
0
Barometric Pressure
(mb)
1022
1020
1018
1016
1014
1012
1010
06
09
12
15
18
21
00
03
06
Time (PST)

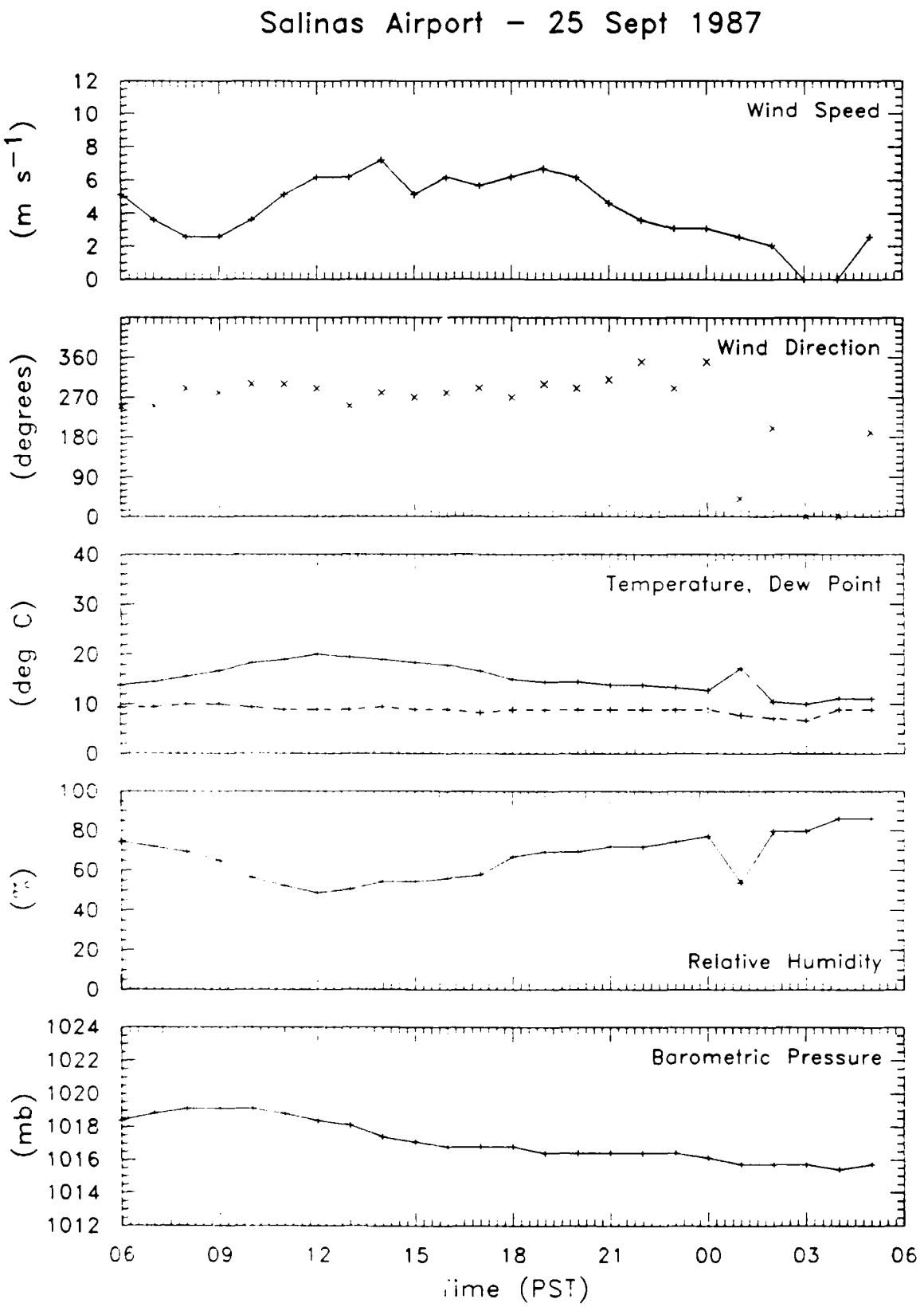

Salinas Airport - 20 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Temperature, Dew Point
(deg C)
40
30
20
10
0
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1022
1020
1018
1016
1014
1012
1010
06
09
12
15
18
21
00
03
06
Time (PST)

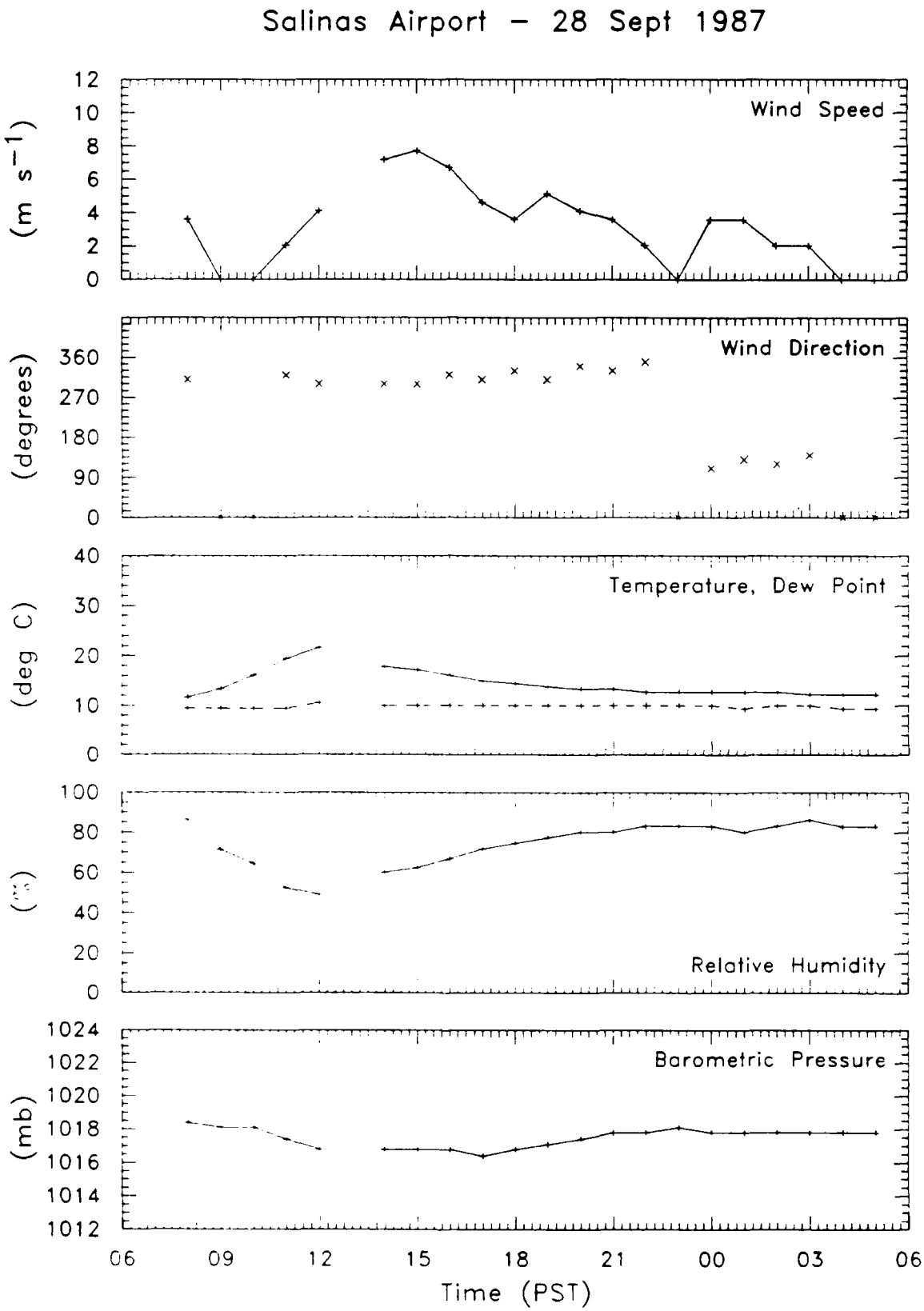

Salinas Airport - 21 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Temperature, Dew Point
(deg C)
40
30
20
10
0
Relative Humidity
100
80
60
40
20
0
Barometric Pressure
(mb)
1020
1018
1016
1014
1012
1010
1008
06
09
12
15
18
21
00
03
06
Time (PST)

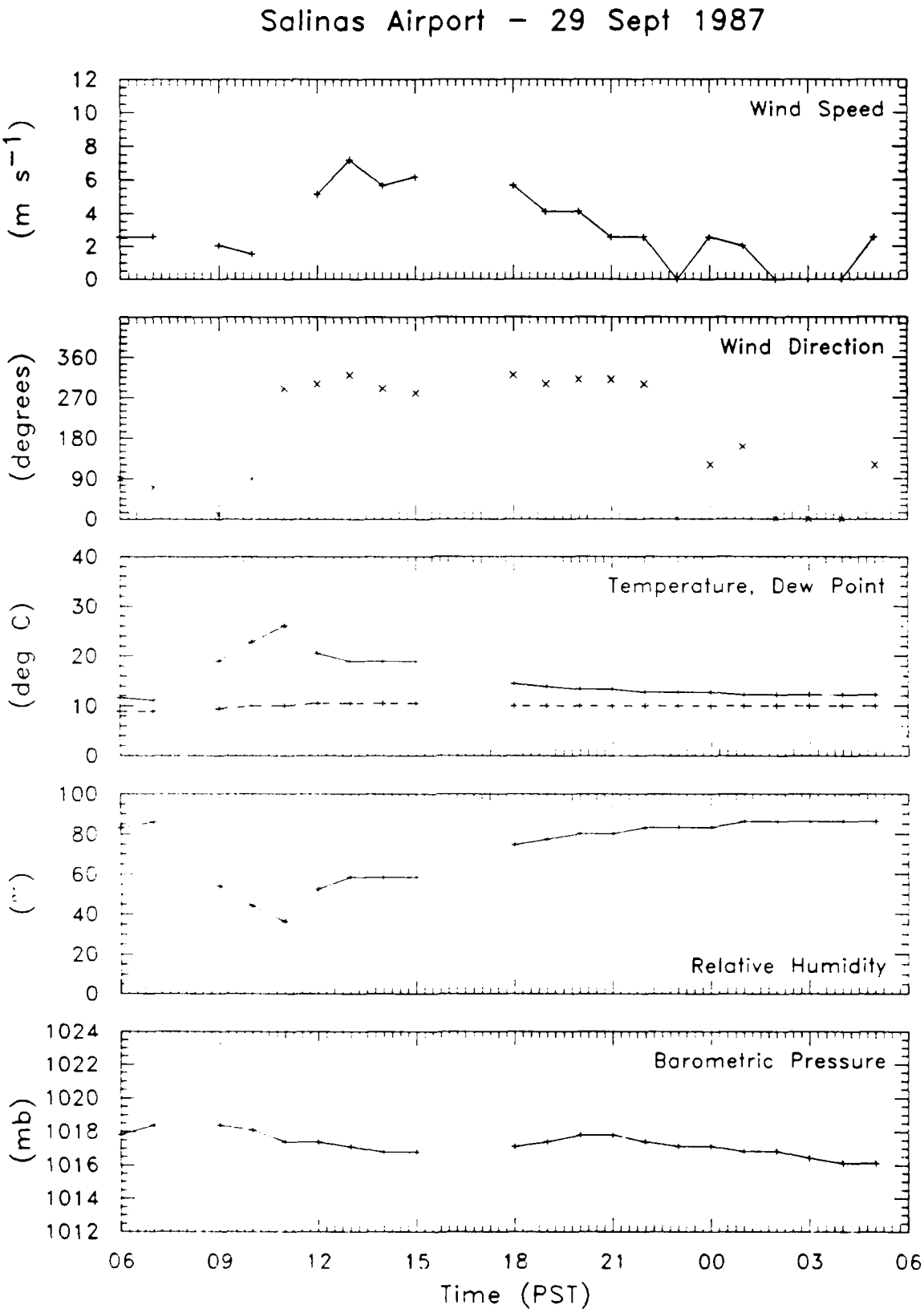

Salinas Airport - 22 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Temperature, Dew Point
(deg C)
40
30
20
10
0
Relative Humidity
100
80
60
40
20
0
Barometric Pressure
(mb)
1022
1020
1018
1016
1014
1012
1010
06
09
12
15
18
21
00
03
06
Time (PST)

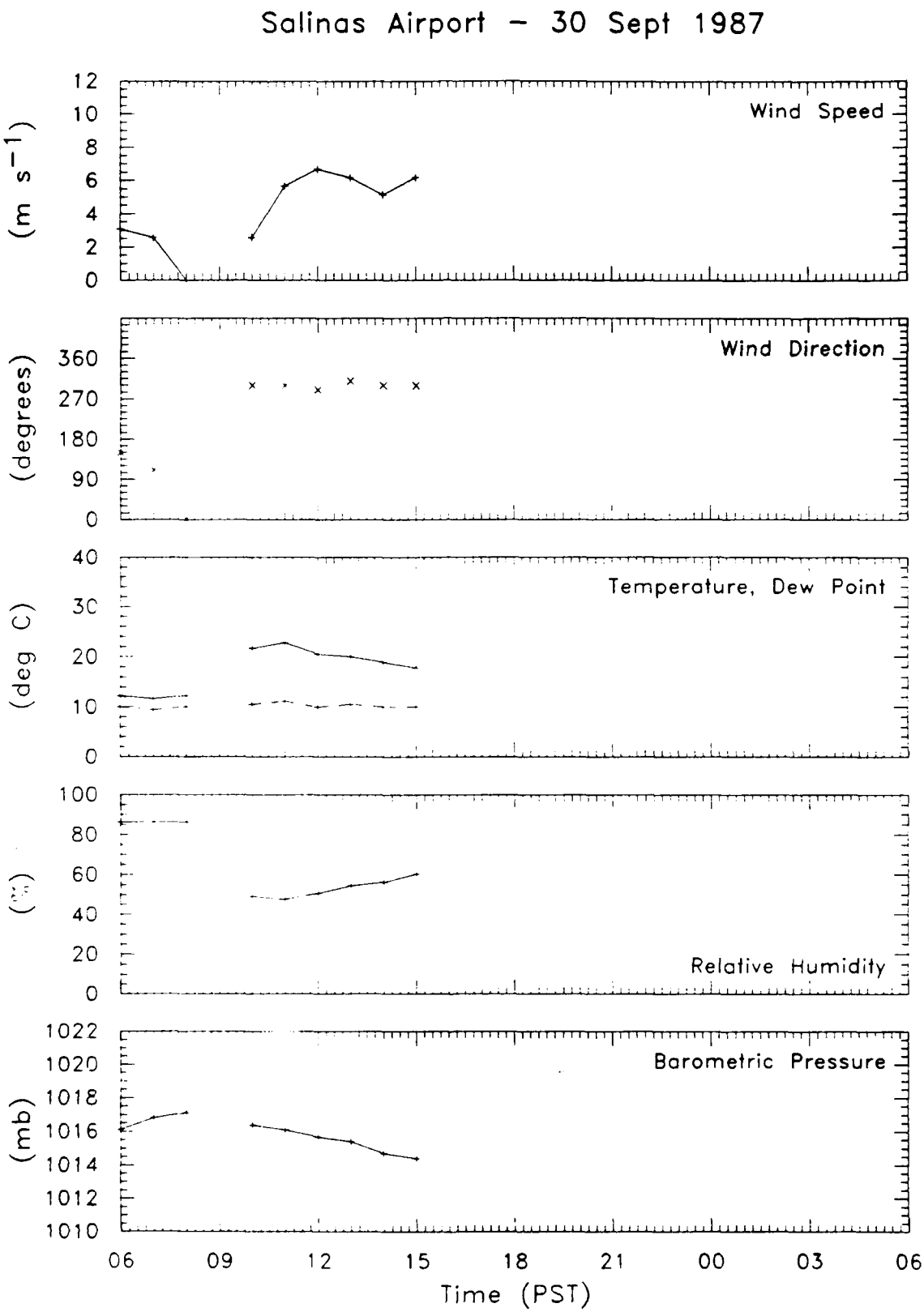

Salinas Airport - 23 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Temperature, Dew Point
(deg C)
40
30
20
10
0
Relative Humidity
100
80
60
40
20
0
Barometric Pressure
(mb)
1024
1022
1020
1018
1016
1014
1012
06
09
12
15
18
21
00
03
06
Time (PST)


Salinas Airport - 24 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Temperature, Dew Point
(deg C)
40
30
20
10
0
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1024
1022
1020
1018
1016
1014
1012
06
09
12
15
18
21
00
03
06
Time (PST)


Salinas Airport - 25 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Temperature, Dew Point
(deg C)
40
30
20
10
0
Relative Humidity
100
80
60
40
20
0
Barometric Pressure
(mb)
1024
1022
1020
1018
1016
1014
1012
06
09
12
15
18
21
00
03
06
Time (PST)

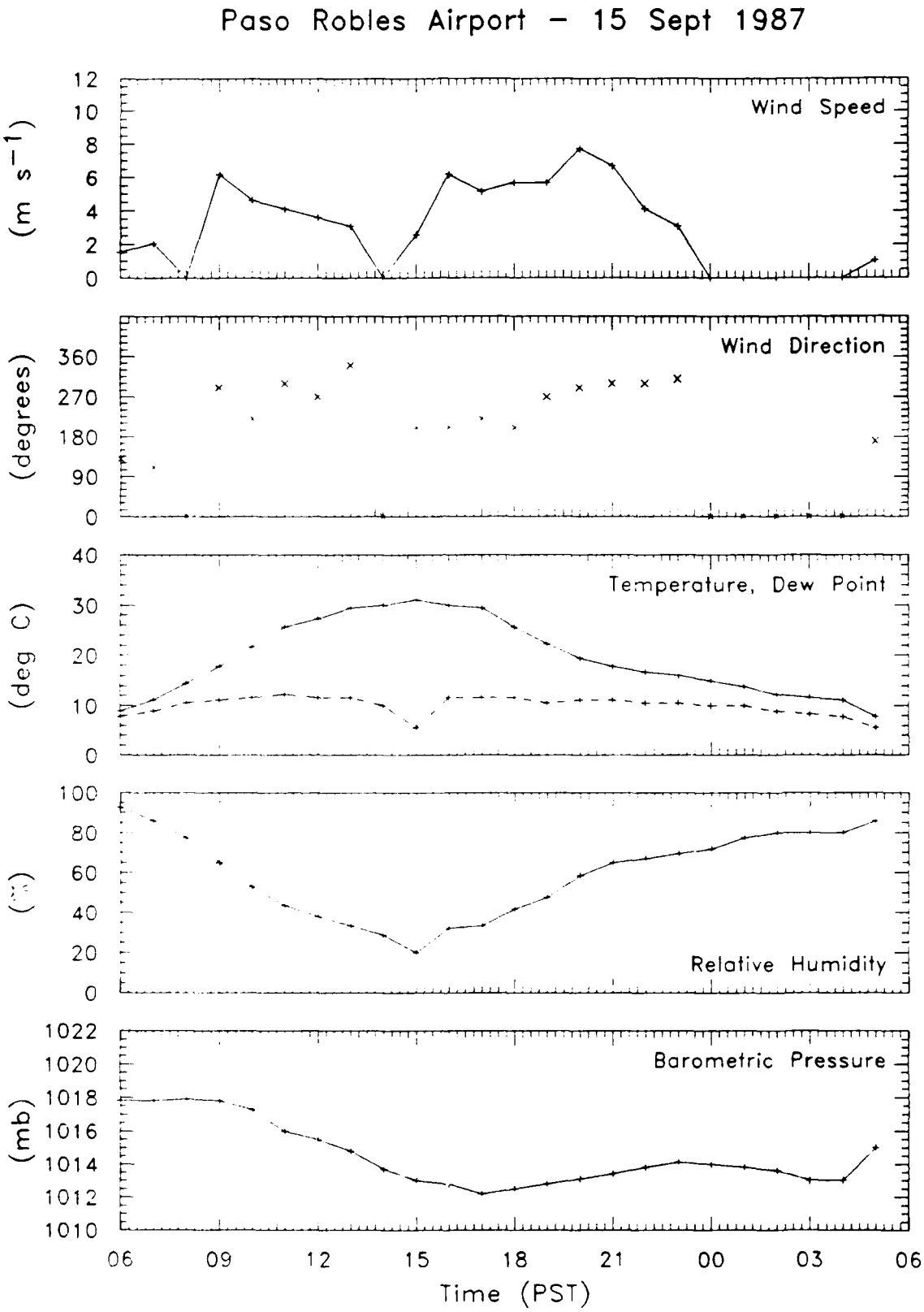

Salinas Airport - 28 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Temperature, Dew Point
(deg C)
40
30
20
10
0
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1024
1022
1020
1018
1016
1014
1012
06
09
12
15
18
21
00
03
06
Time (PST)

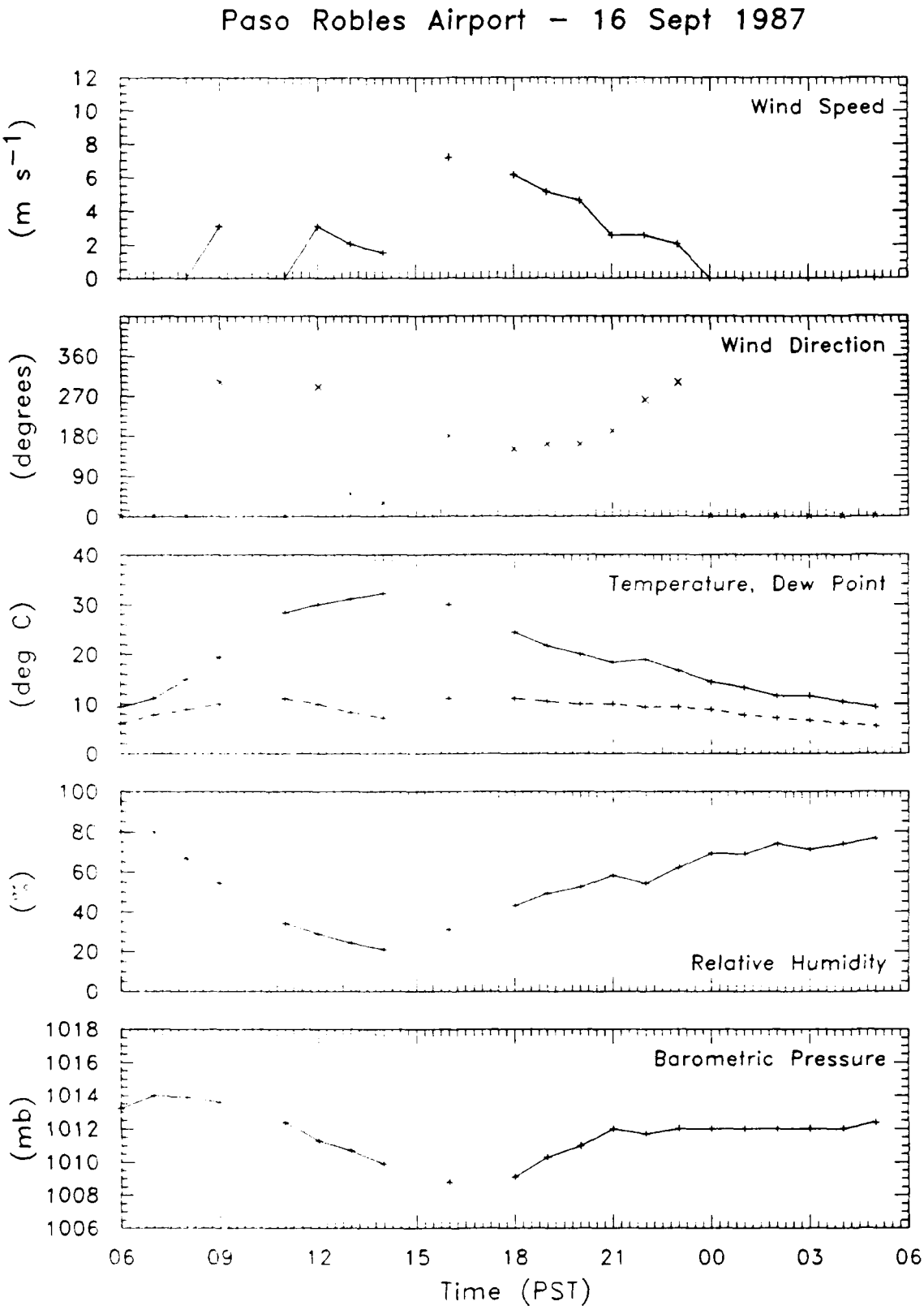

Salinas Airport - 29 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Temperature, Dew Point
(deg C)
40
30
20
10
0
Relative Humidity
100
80
60
40
20
0
Barometric Pressure
(mb)
1024
1022
1020
1018
1016
1014
1012
06
09
12
15
18
21
00
03
06
Time (PST)

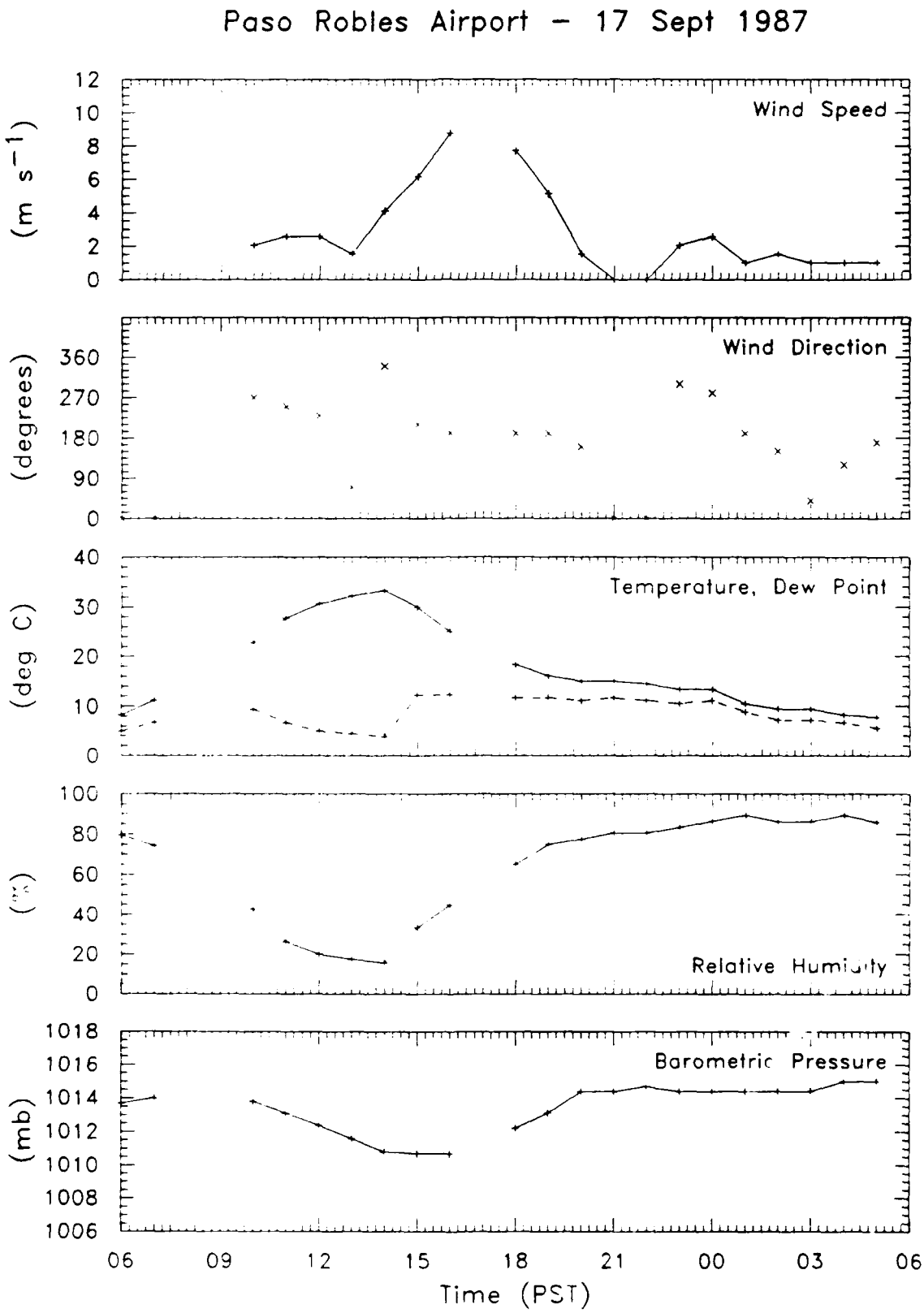

Salinas Airport - 30 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Temperature, Dew Point
(deg C)
40
30
20
10
0
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1022
1020
1018
1016
1014
1012
1010
06
09
12
15
18
21
00
03
06
Time (PST)

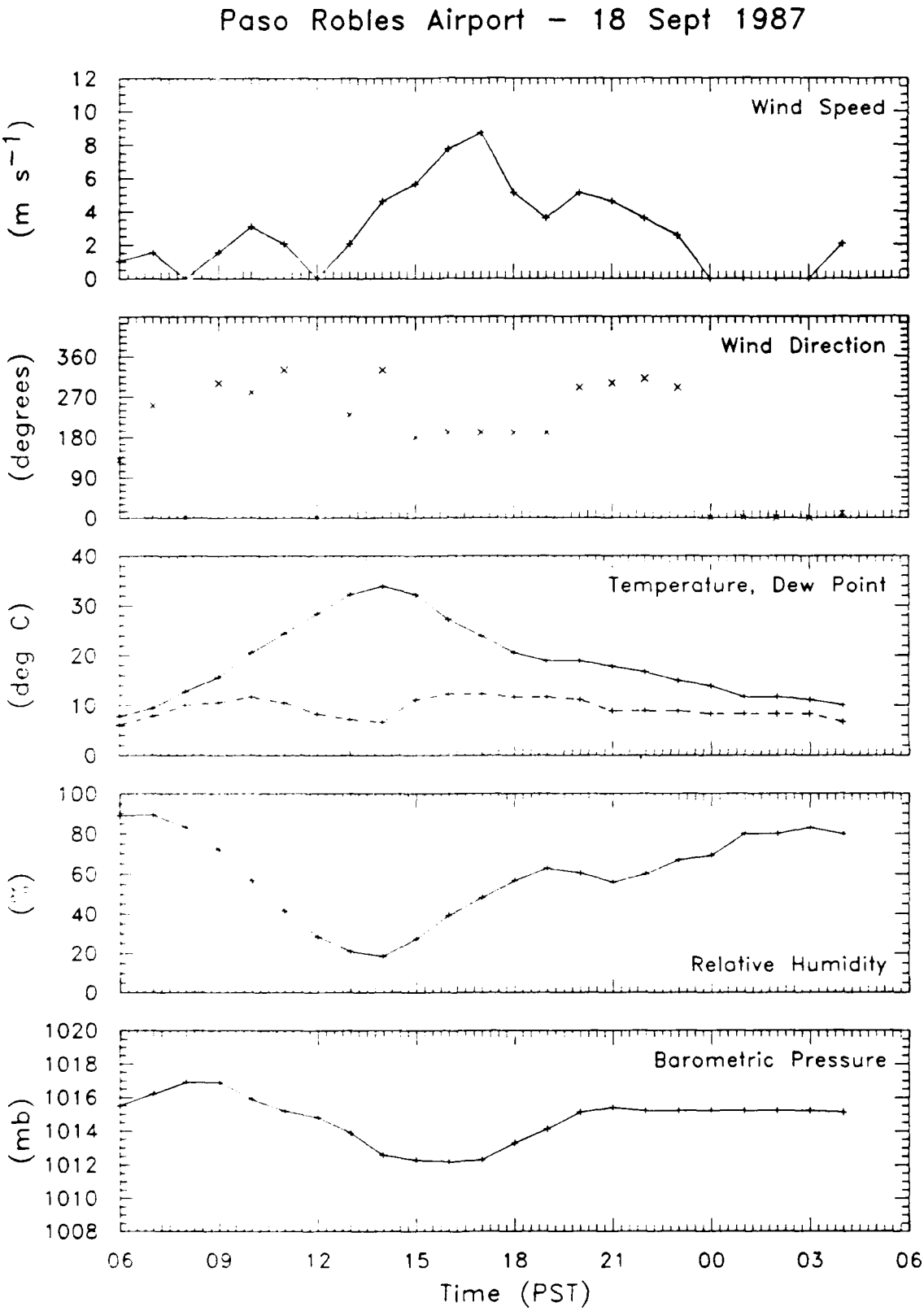
15. TIME SERIES, PASO ROBLES AIRPORT

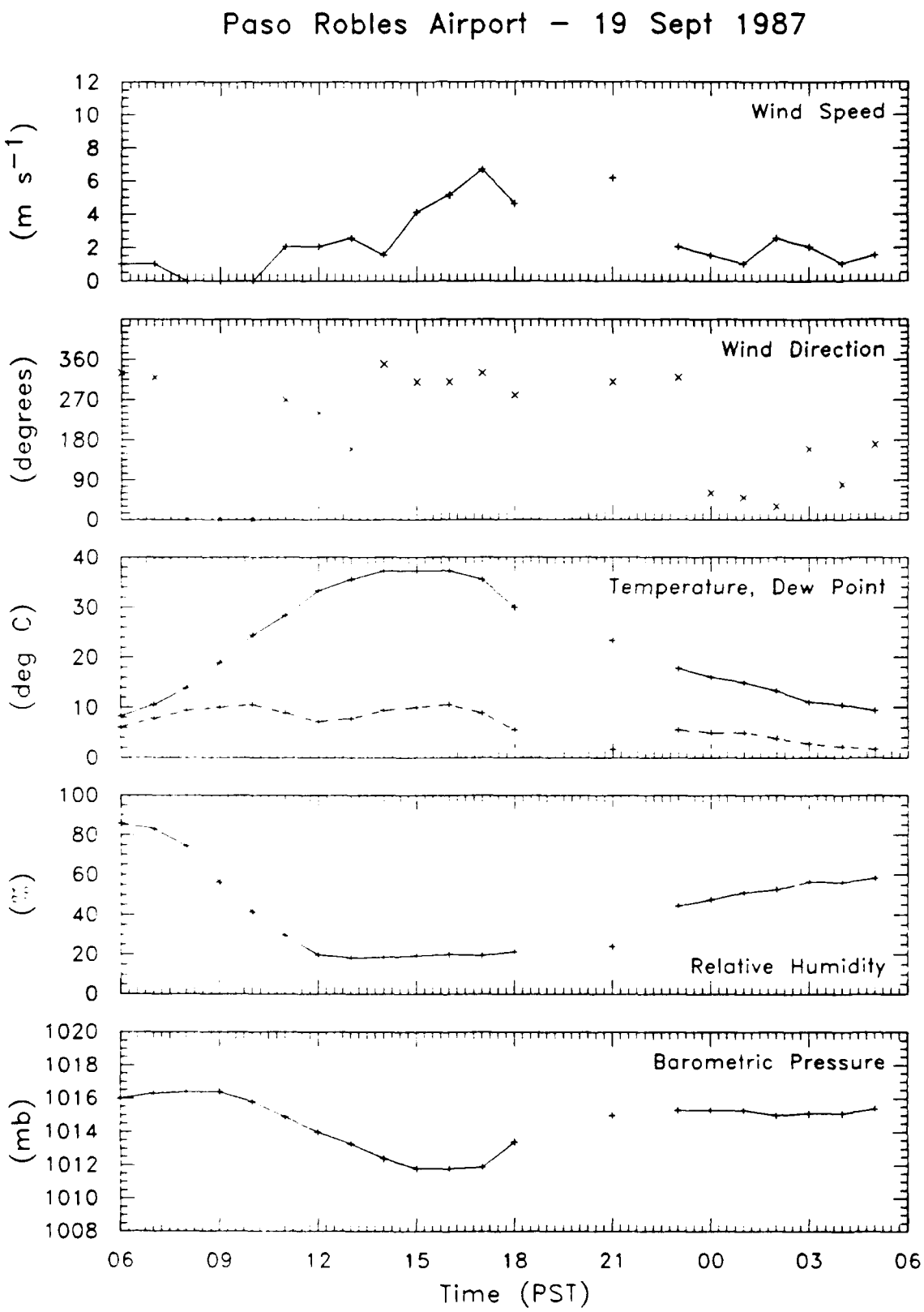
This section presents graphs of all data recorded hourly at the Paso Robles Airport during LASBEX. Paso Robles is approximately 150 km up the Salinas Valley from Monterey Bay and is therefore not shown in Fig. 1.

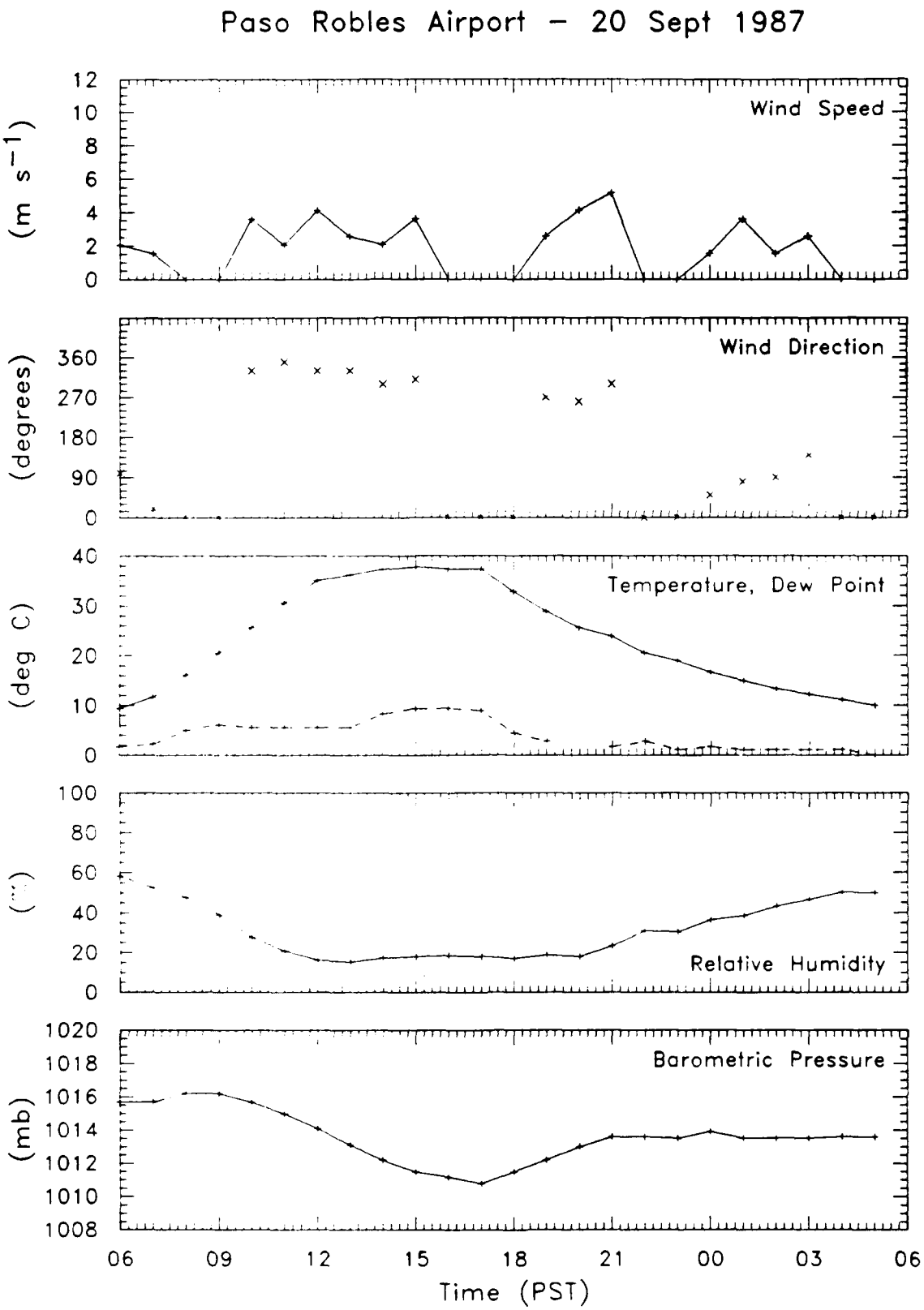

Paso Robles Airport - 15 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Temperature, Dew Point
(deg C)
40
30
20
10
0
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1022
1020
1018
1016
1014
1012
1010
06
09
12
15
18
21
00
03
06
Time (PST)

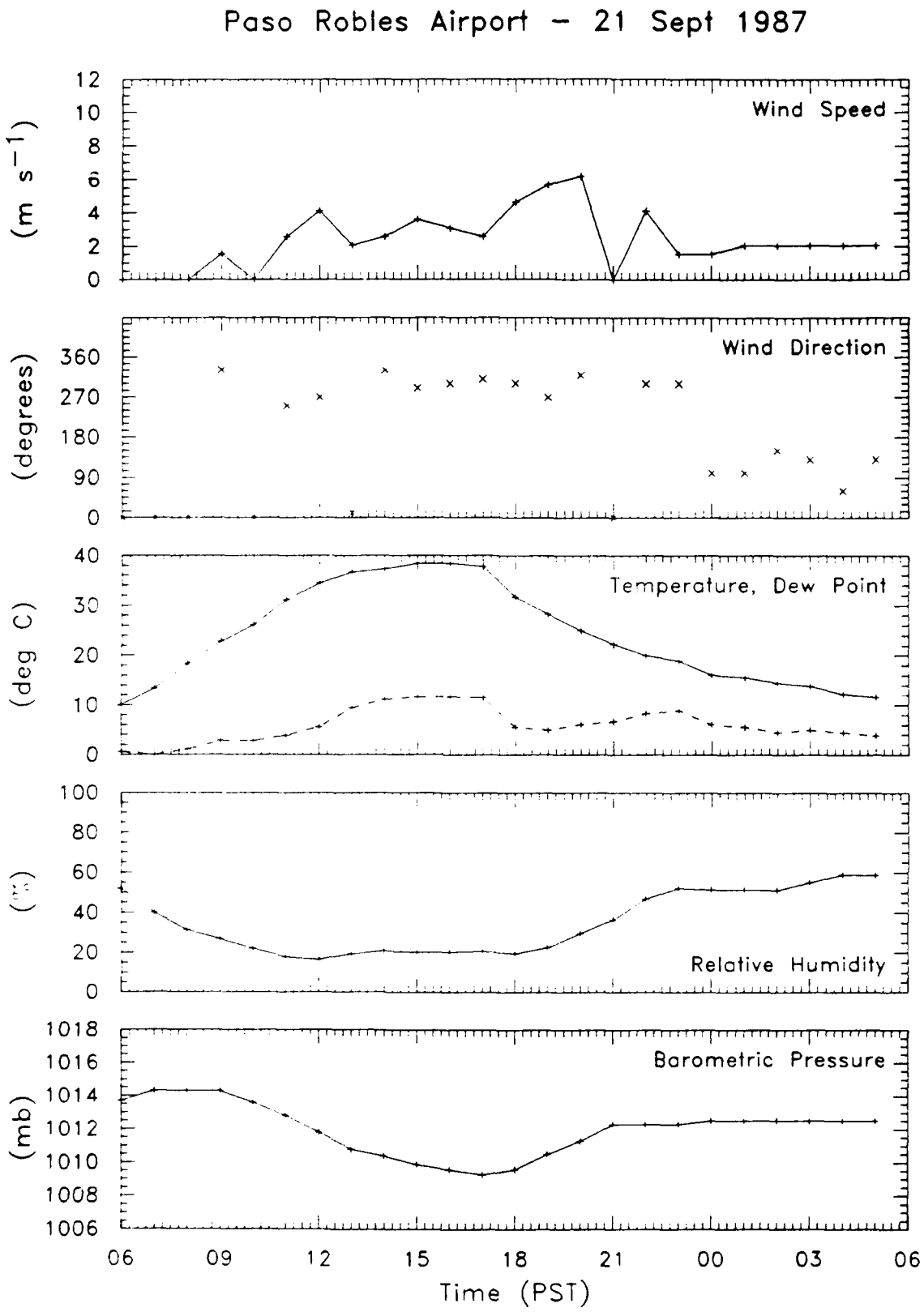

Paso Robles Airport – 16 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Temperature, Dew Point
(deg C)
40
30
20
10
0
Relative Humidity
100
80
60
40
20
0
Barometric Pressure
(mb)
1018
1016
1014
1012
1010
1008
1006
06
09
12
15
18
21
00
03
06
Time (PST)

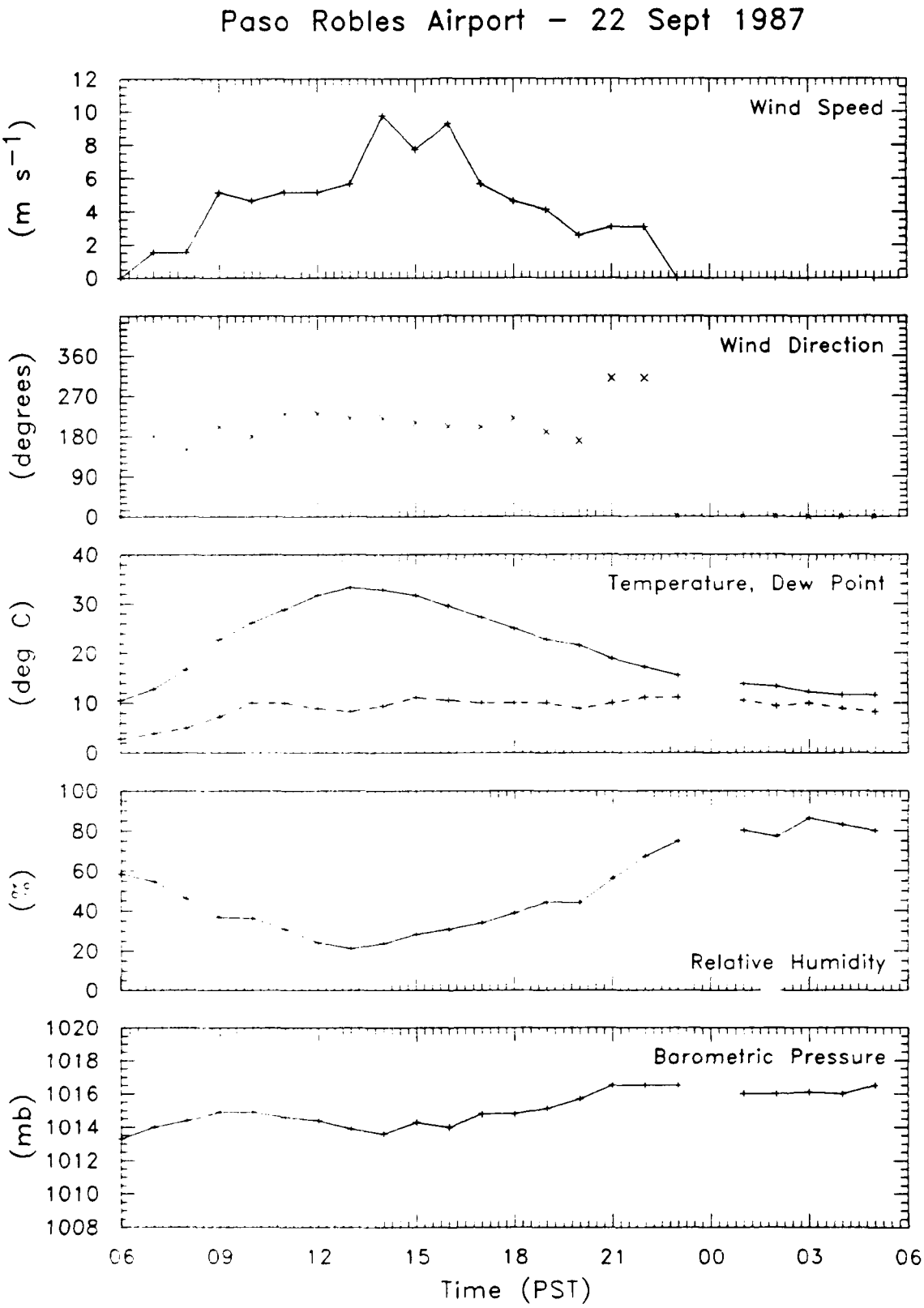

Paso Robles Airport - 17 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Temperature, Dew Point
(deg C)
40
30
20
10
0
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1018
1016
1014
1012
1010
1008
1006
06
09
12
15
18
21
00
03
06
Time (PST)

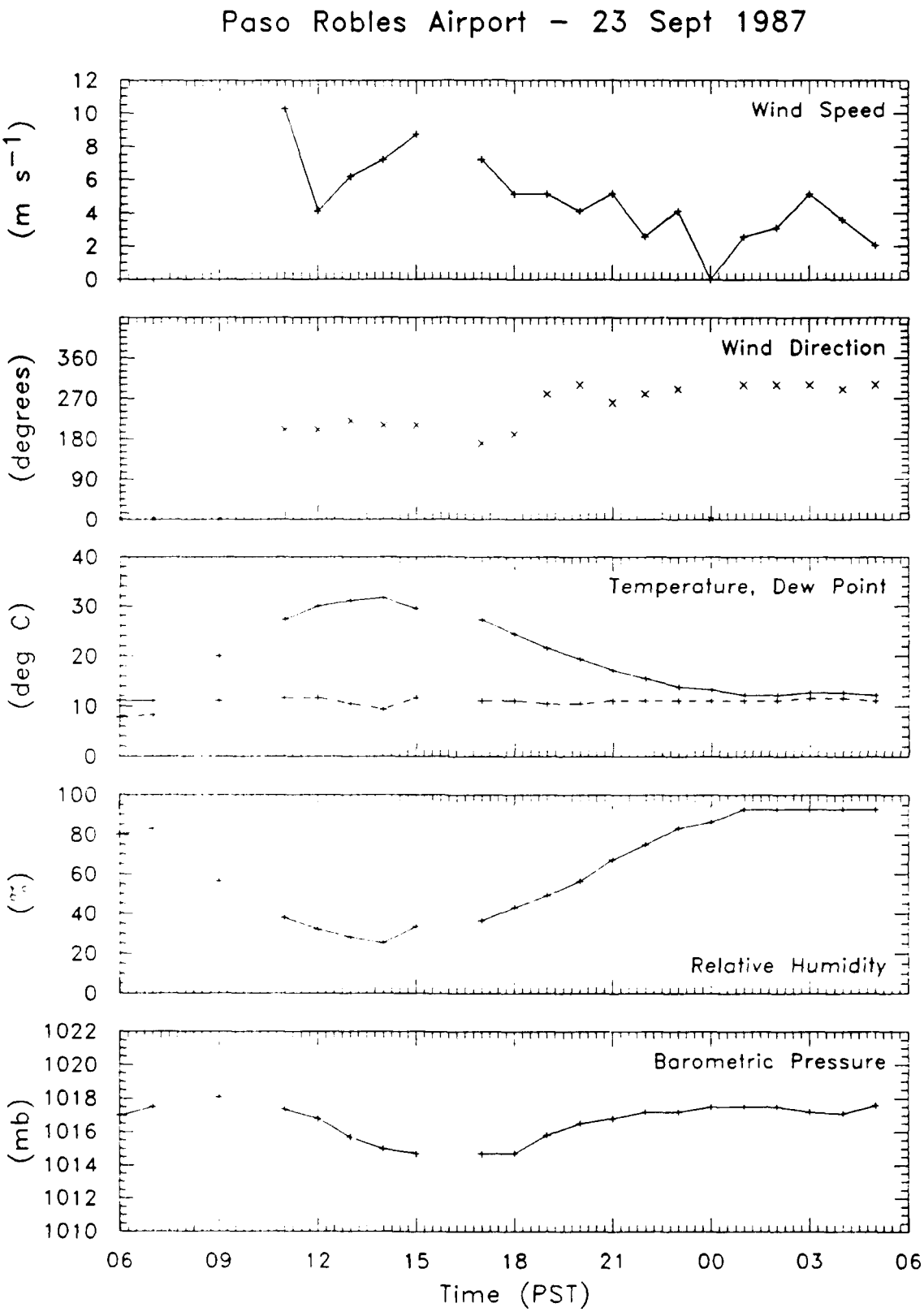

Paso Robles Airport - 18 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Temperature, Dew Point
(deg C)
40
30
20
10
0
Relative Humidity
100
80
60
40
20
0
Barometric Pressure
(mb)
1020
1018
1016
1014
1012
1010
1008
06
09
12
15
18
21
00
03
06
Time (PST)

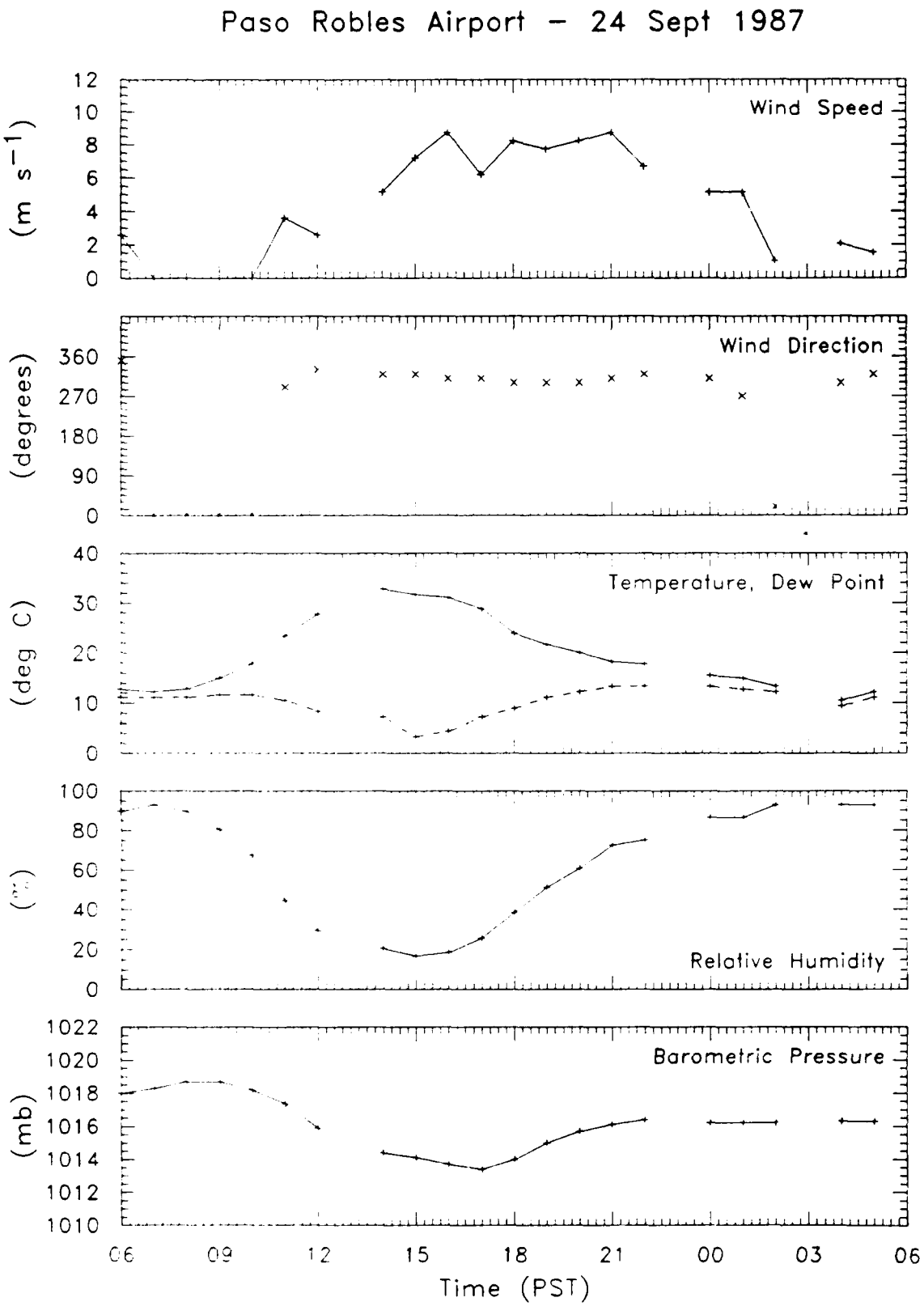

Paso Robles Airport – 19 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Temperature, Dew Point
(deg C)
40
30
20
10
0
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1020
1018
1016
1014
1012
1010
1008
06
09
12
15
18
21
00
03
06
Time (PST)

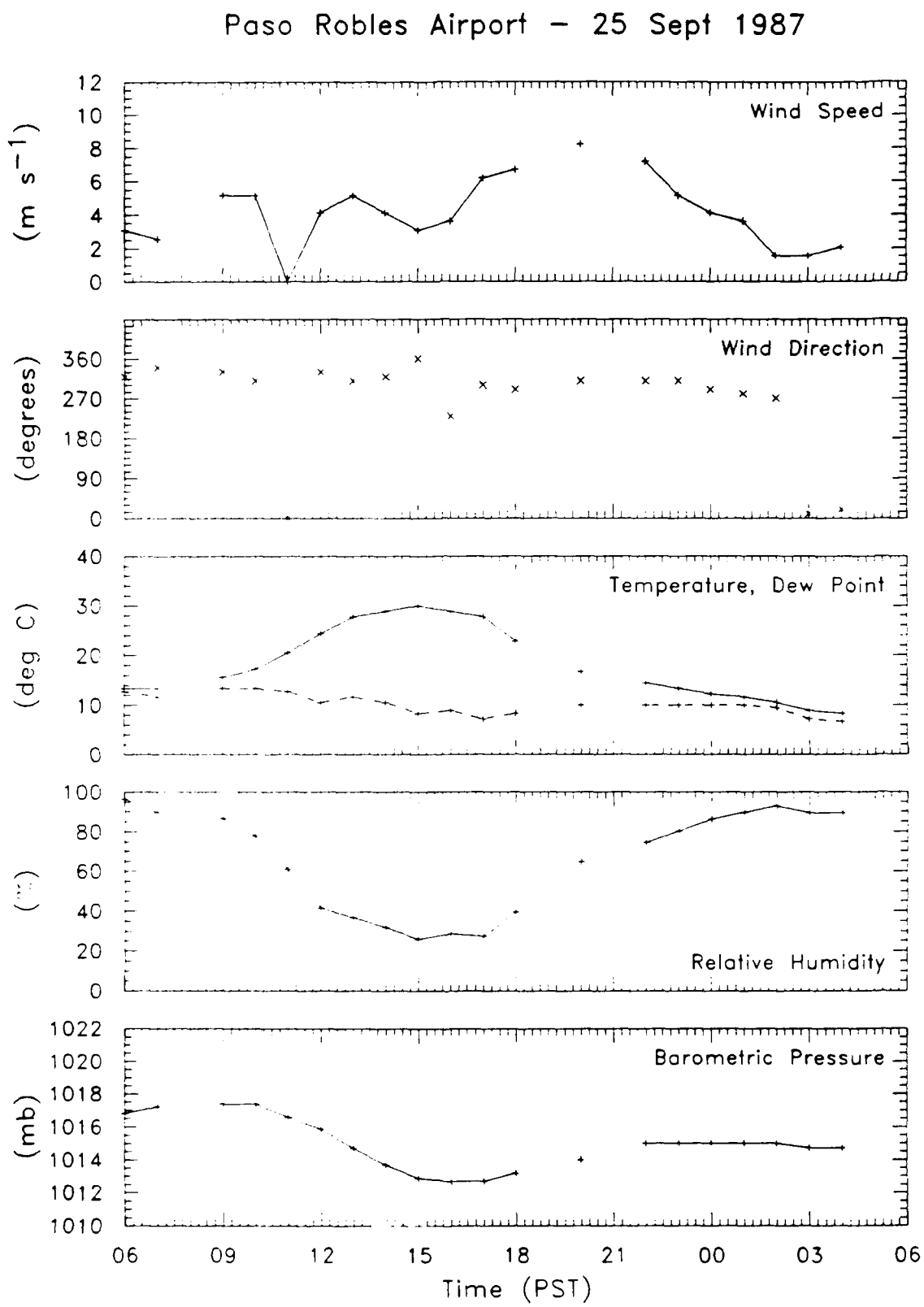

Paso Robles Airport - 20 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Temperature, Dew Point
(deg C)
40
30
20
10
0
Relative Humidity
100
80
60
40
20
0
Barometric Pressure
(mb)
1020
1018
1016
1014
1012
1010
1008
06
09
12
15
18
21
00
03
06
Time (PST)

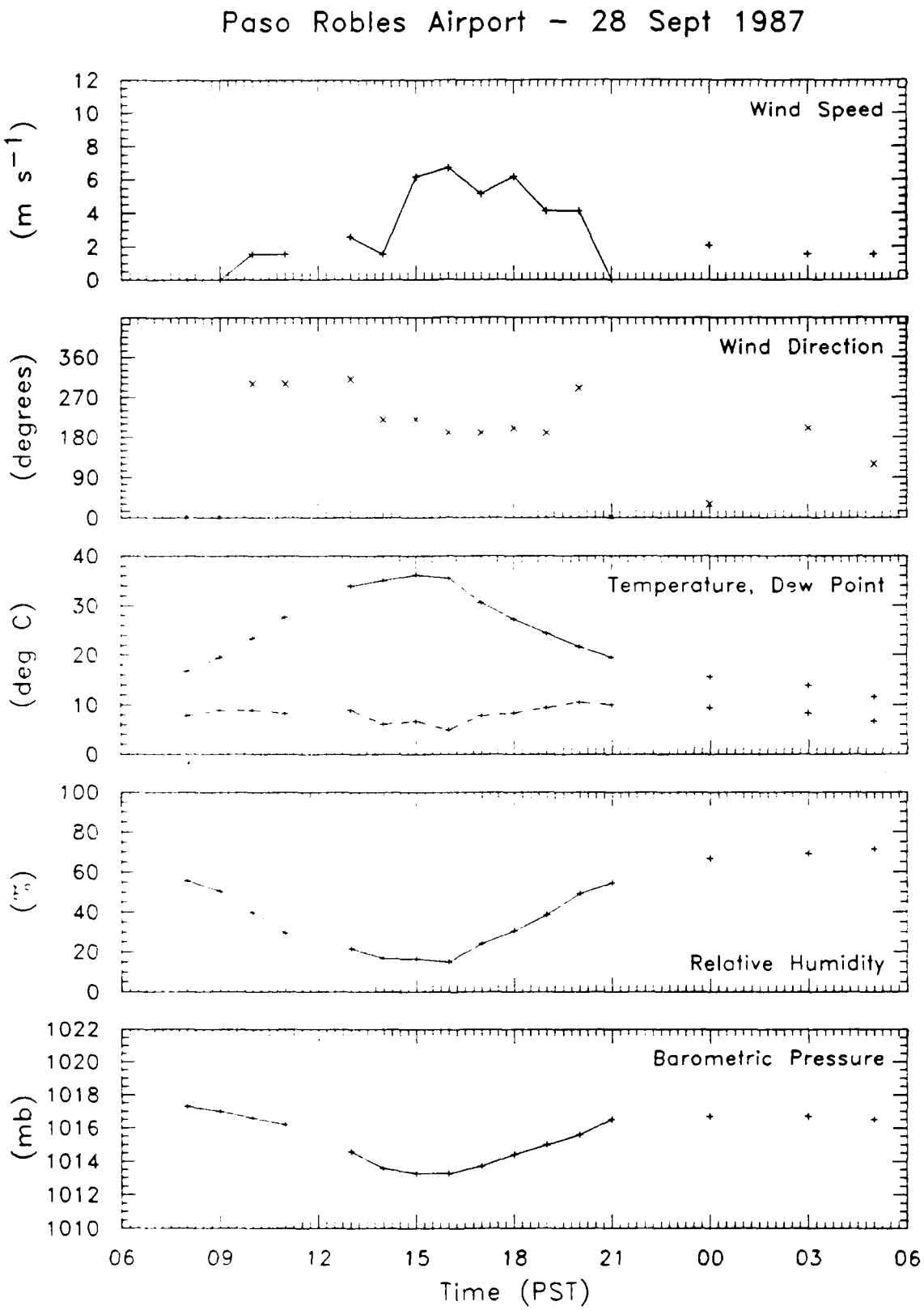

Paso Robles Airport - 21 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Temperature, Dew Point
(deg C)
40
30
20
10
0
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1018
1016
1014
1012
1010
1008
1006
06
09
12
15
18
21
00
03
06
Time (PST)

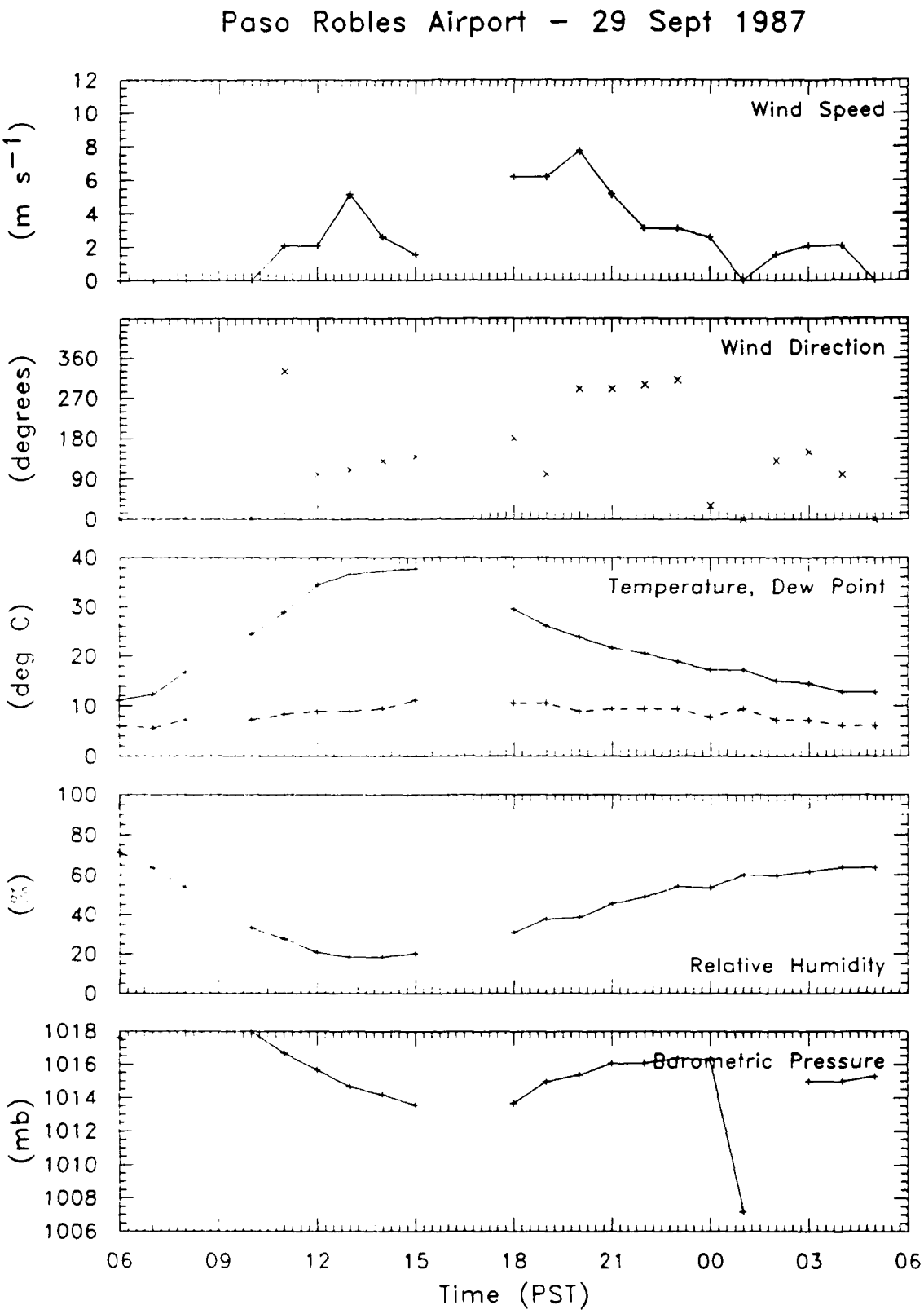

Paso Robles Airport - 22 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Temperature, Dew Point
(deg C)
40
30
20
10
0
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1020
1018
1016
1014
1012
1010
1008
06
09
12
15
18
21
00
03
06
Time (PST)

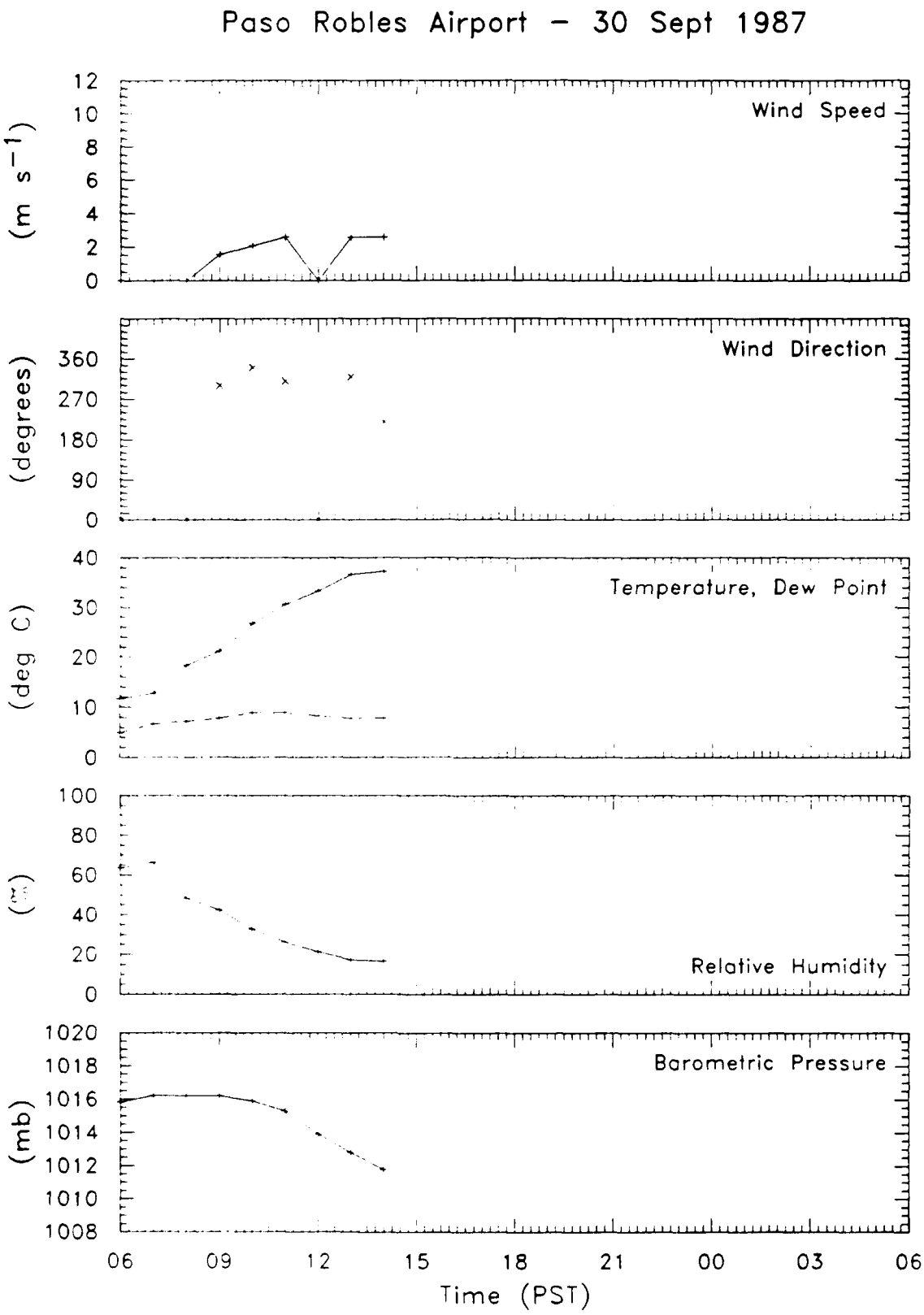

Paso Robles Airport - 23 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Temperature, Dew Point
(deg C)
40
30
20
10
0
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1022
1020
1018
1016
1014
1012
1010
06
09
12
15
18
21
00
03
06
Time (PST)


Paso Robles Airport - 24 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Temperature, Dew Point
(deg C)
40
30
20
10
0
Relative Humidity
100
80
60
40
20
0
Barometric Pressure
(mb)
1022
1020
1018
1016
1014
1012
1010
06
09
12
15
18
21
00
03
06
Time (PST)


Paso Robles Airport - 25 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Temperature, Dew Point
(deg C)
40
30
20
10
0
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1022
1020
1018
1016
1014
1012
1010
06
09
12
15
18
21
00
03
06
Time (PST)

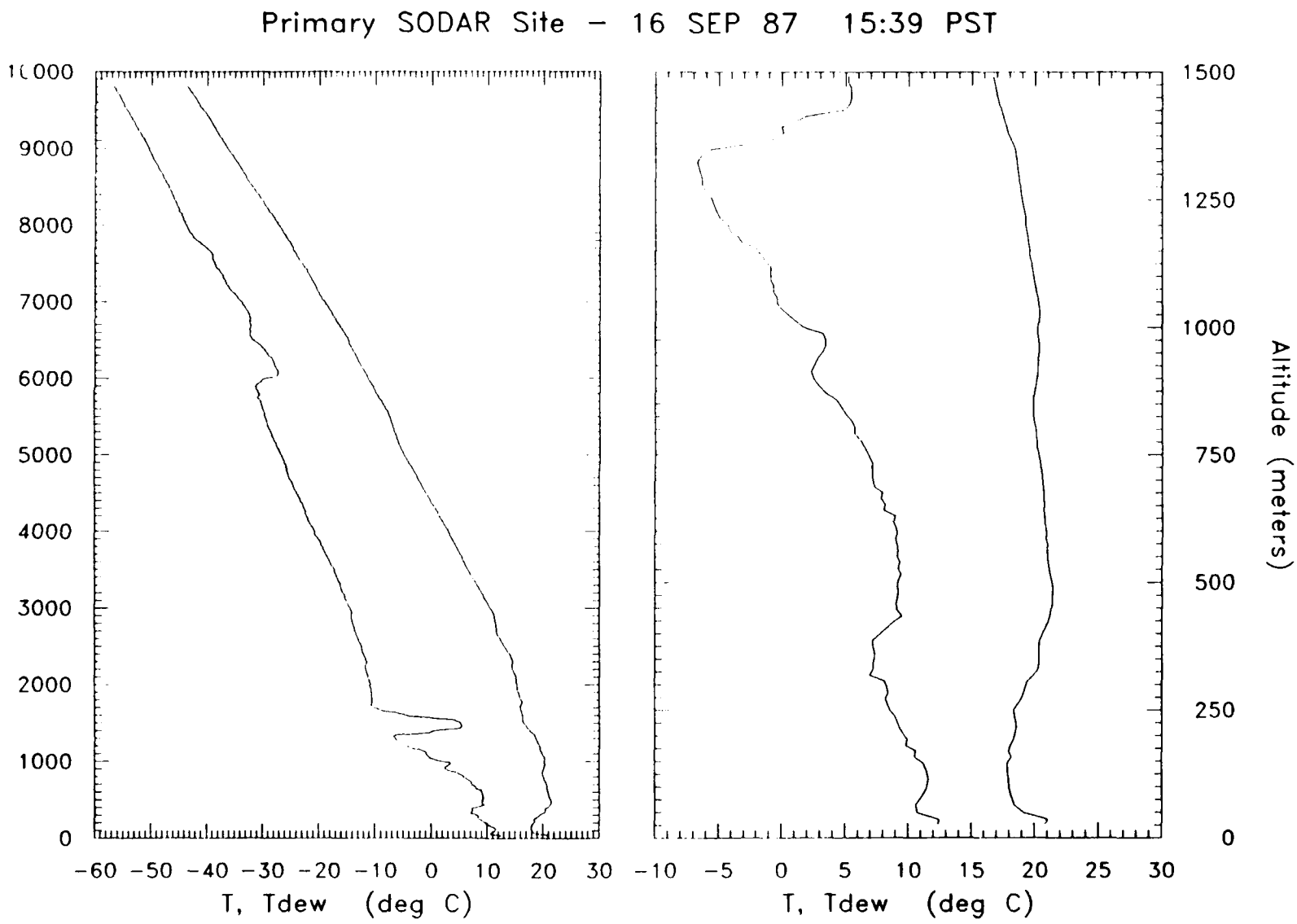

Paso Robles Airport - 28 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Temperature, Dew Point
(deg C)
40
30
20
10
0
Relative Humidity
(%)
100
80
60
40
20
0
Barometric Pressure
(mb)
1022
1020
1018
1016
1014
1012
1010
06
09
12
15
18
21
00
03
06
Time (PST)

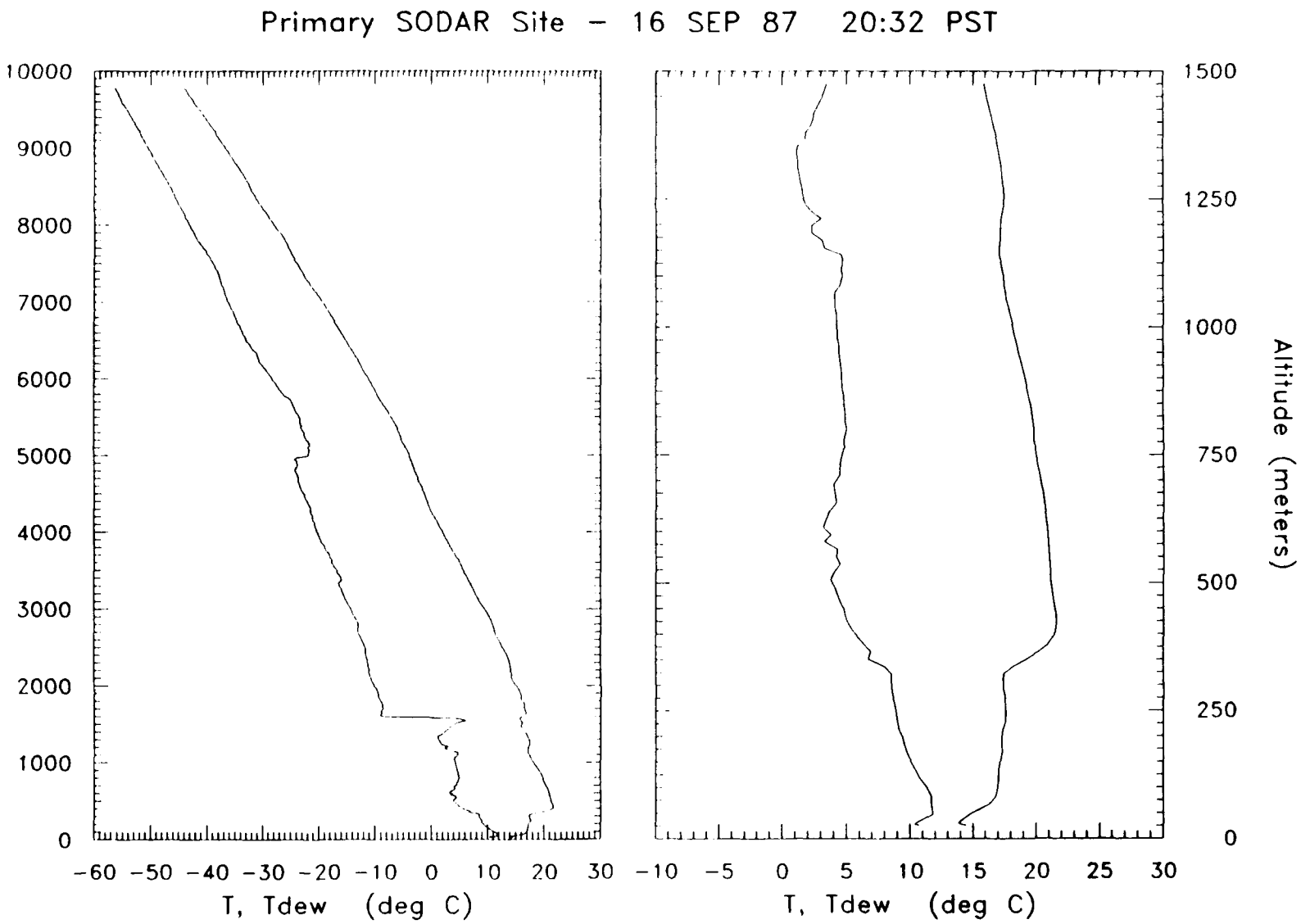

Paso Robles Airport - 29 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Temperature, Dew Point
(deg C)
40
30
20
10
0
Relative Humidity
100
80
60
40
20
0
Barometric Pressure
(mb)
1018
1016
1014
1012
1010
1008
1006
06
09
12
15
18
21
00
03
06
Time (PST)

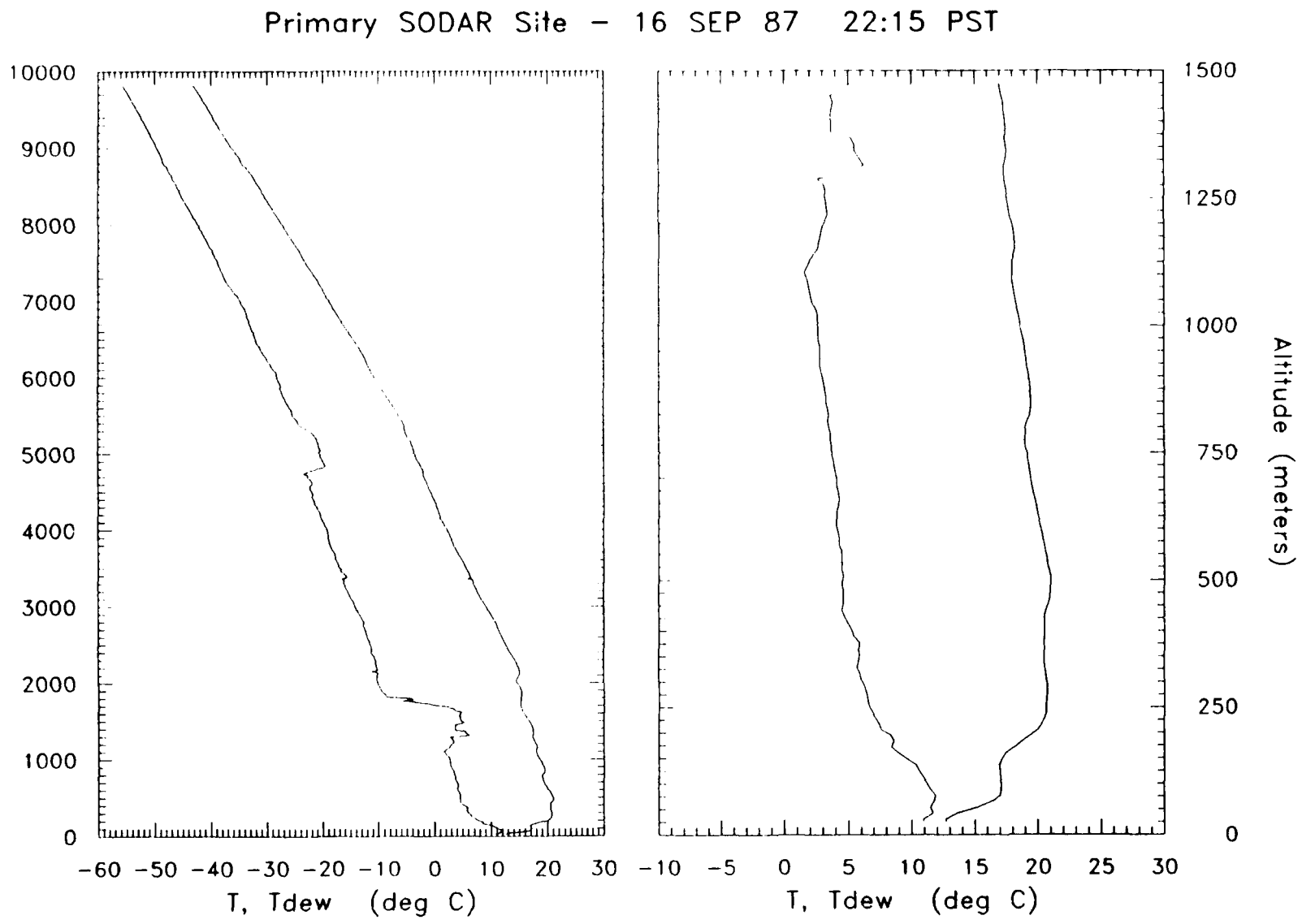

Paso Robles Airport - 30 Sept 1987
Wind Speed
(m s^{-1})
12
10
8
6
4
2
0
Wind Direction
(degrees)
360
270
180
90
0
Temperature, Dew Point
(deg C)
40
30
20
10
0
Relative Humidity
100
80
60
40
20
0
Barometric Pressure
(mb)
1020
1018
1016
1014
1012
1010
1008
06
09
12
15
18
21
00
03
06
Time (PST)

16. RADIOSONDE PROFILES, PRIMARY SODAR SITE

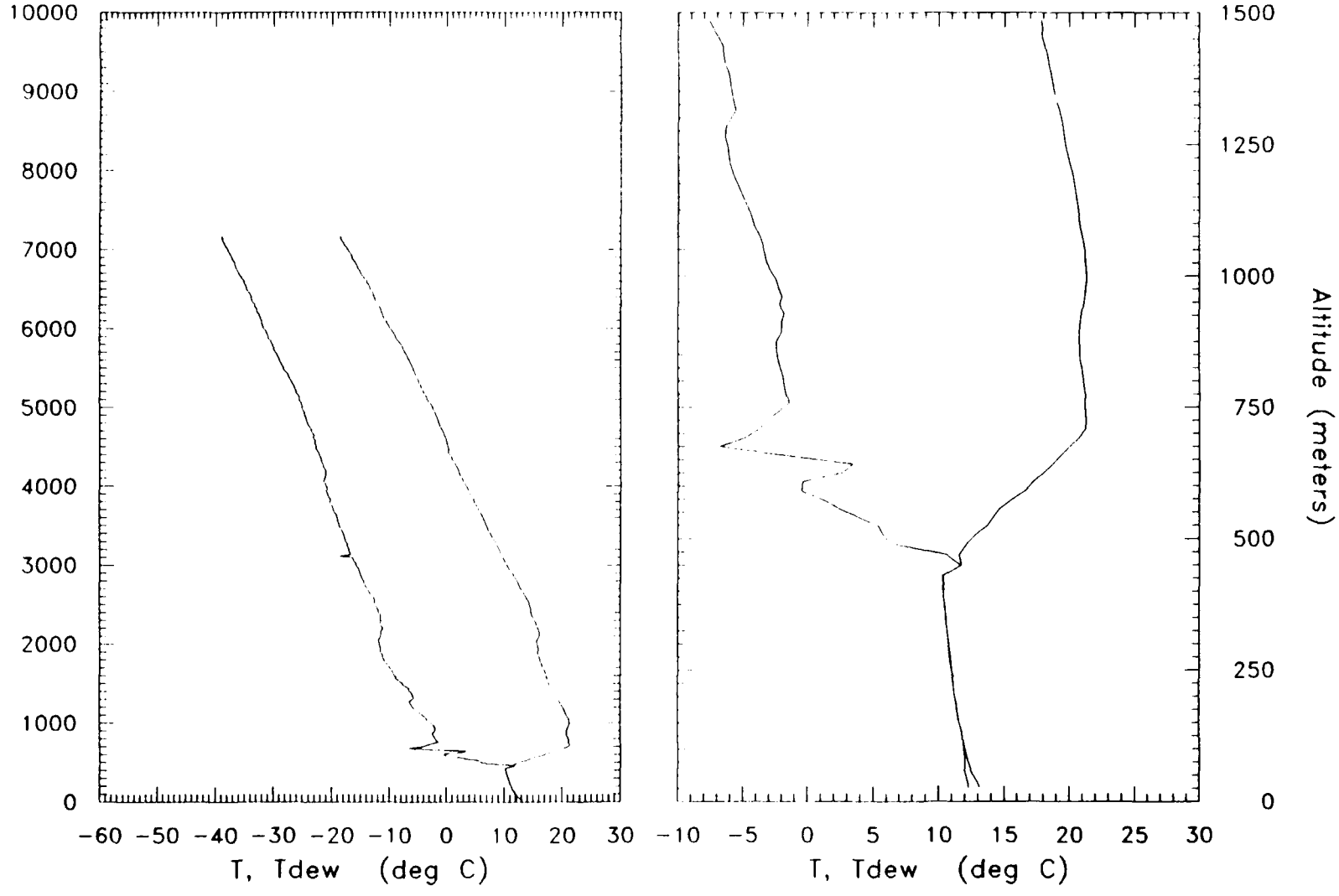
This section presents the 27 profiles of temperature and dewpoint collected by radiosondes launched from the northern vertex of the sodar triangle. The left panel for each page contains the a profile in its entirety. The right expands the lowest 1500 m.

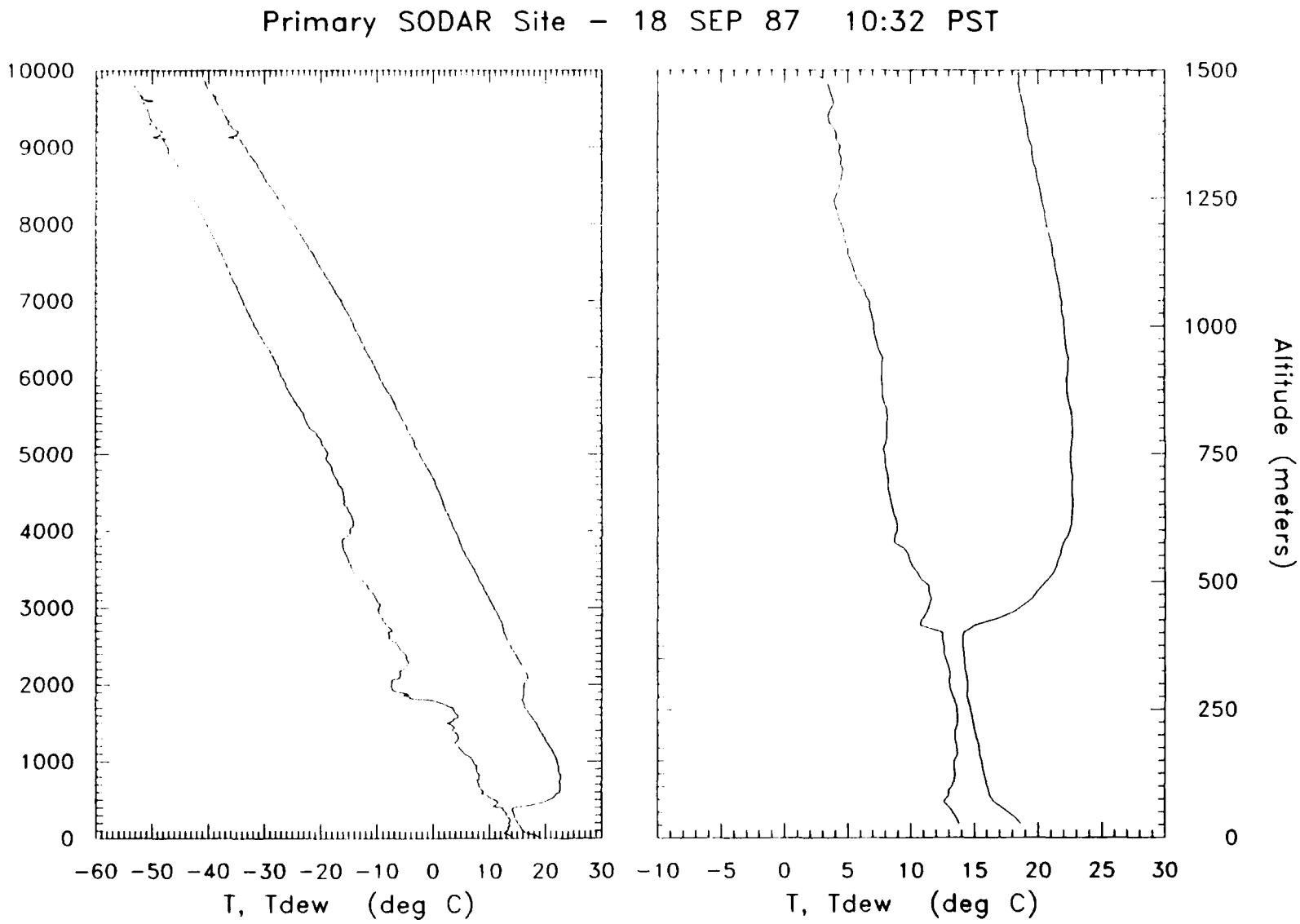

Primary SODAR Site - 16 SEP 87 15:39 PST
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
-60 -50 -40 -30 -20 -10 0 10 20 30
T, Tdew (deg C)
-10 -5 0 5 10 15 20 25 30
T, Tdew (deg C)
1500
1250
1000
750
500
250
0
Altitude (meters)

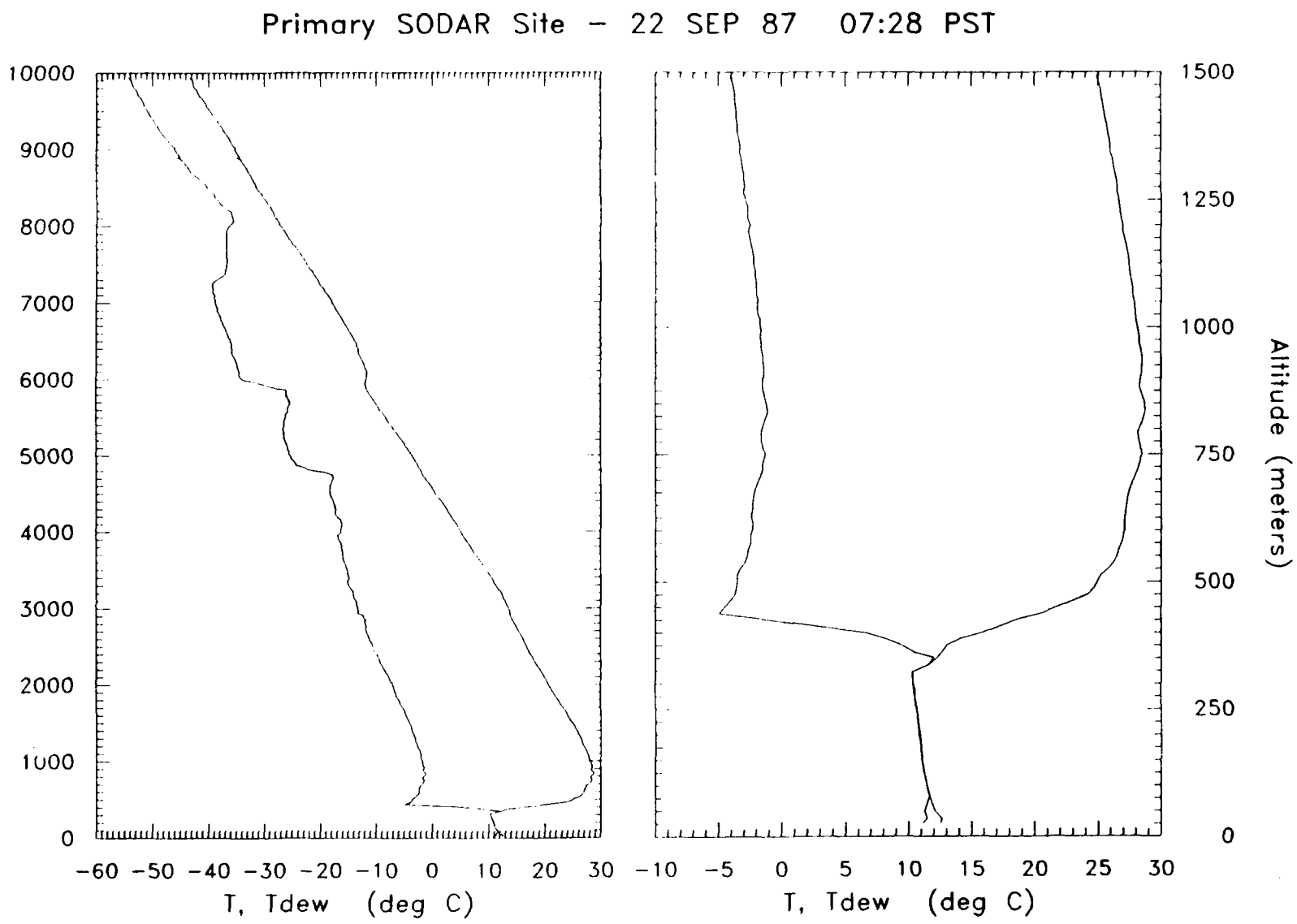

Primary SODAR Site - 16 SEP 87 20:32 PST
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
-60 -50 -40 -30 -20 -10 0 10 20 30
T, Tdew (deg C)
-10 -5 0 5 10 15 20 25 30
T, Tdew (deg C)
1500
1250
1000
750
500
250
0
Altitude (meters)

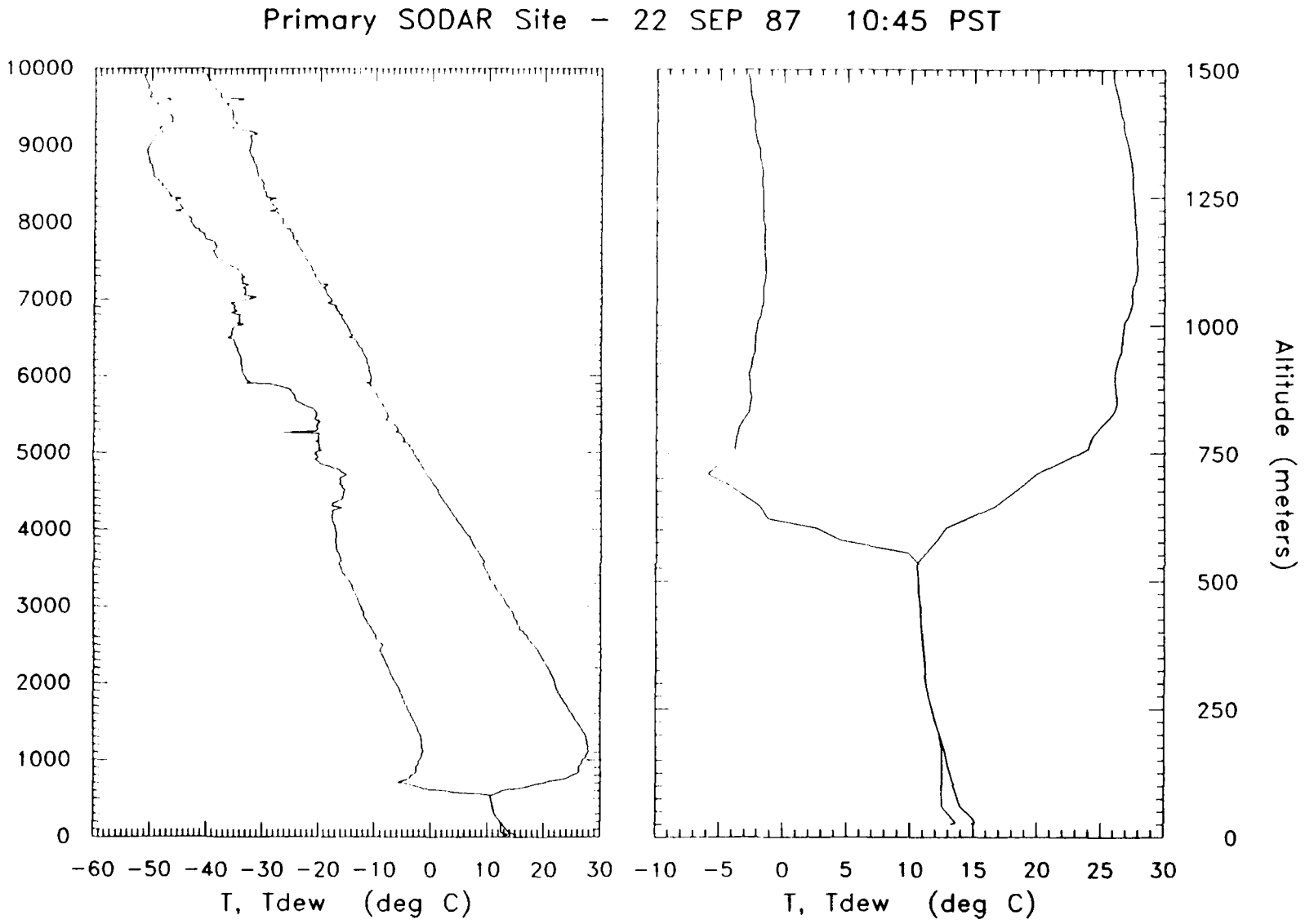

Primary SODAR Site - 16 SEP 87 22:15 PST
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
-60 -50 -40 -30 -20 -10 0 10 20 30
T, Tdew (deg C)
-10 -5 0 5 10 15 20 25 30
T, Tdew (deg C)
1500
1250
1000
750
500
250
0
Altitude (meters)

Primary SODAR Site - 18 SEP 87 07:44 PST

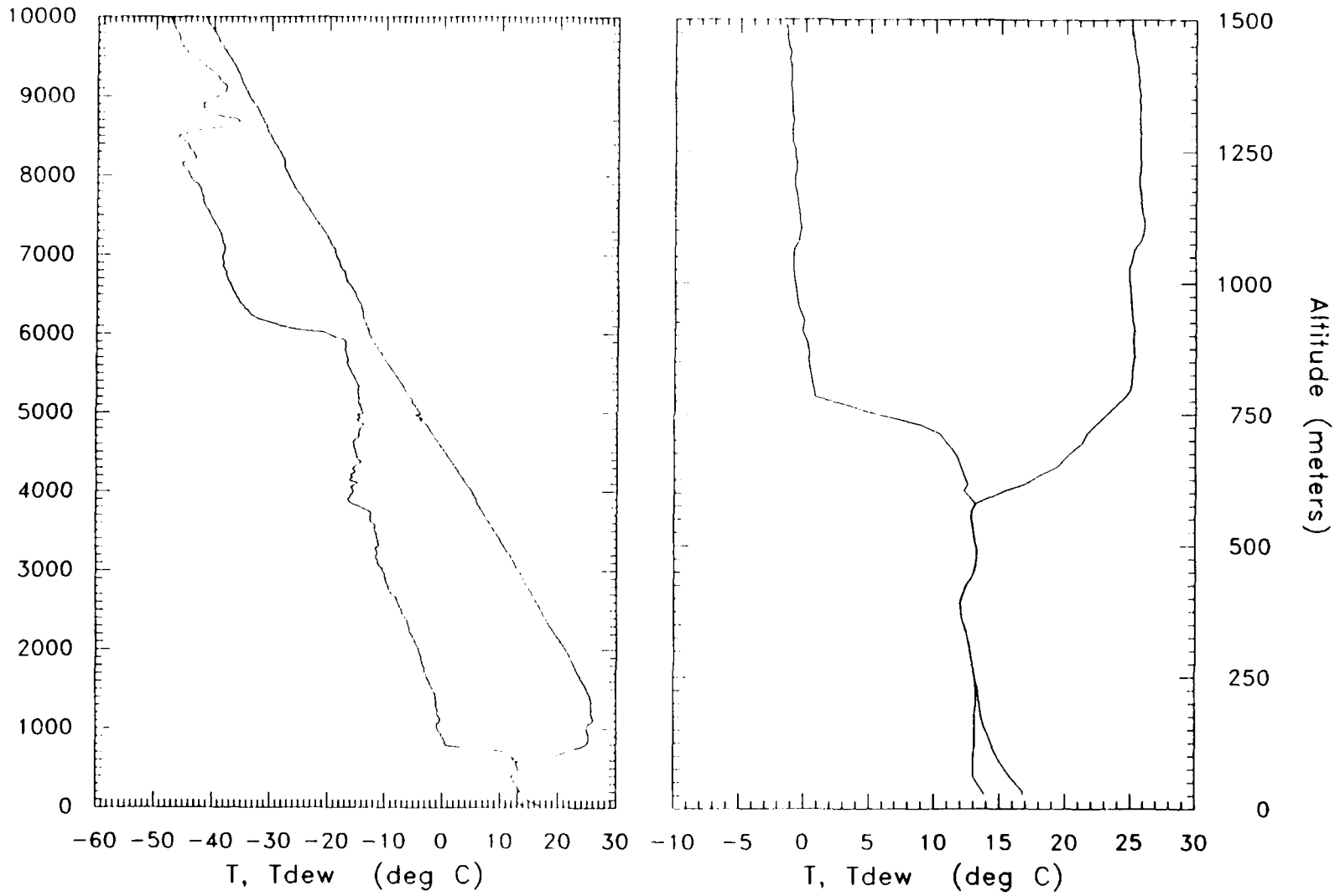


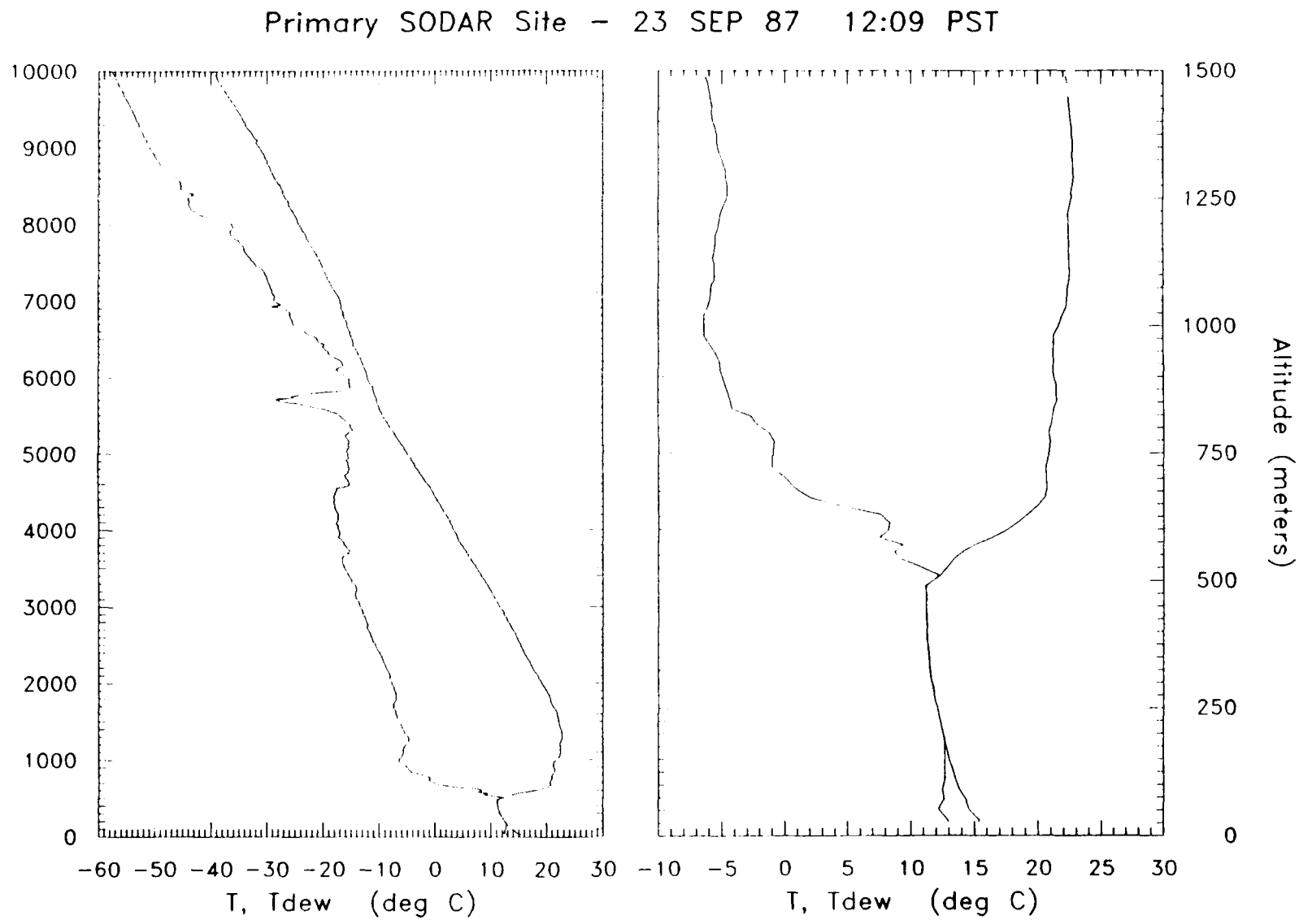

Primary SODAR Site - 18 SEP 87 10:32 PST
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
-60 -50 -40 -30 -20 -10 0 10 20 30
T, Tdew (deg C)
-10 -5 0 5 10 15 20 25 30
T, Tdew (deg C)
1500
1250
1000
750
500
250
0
Altitude (meters)

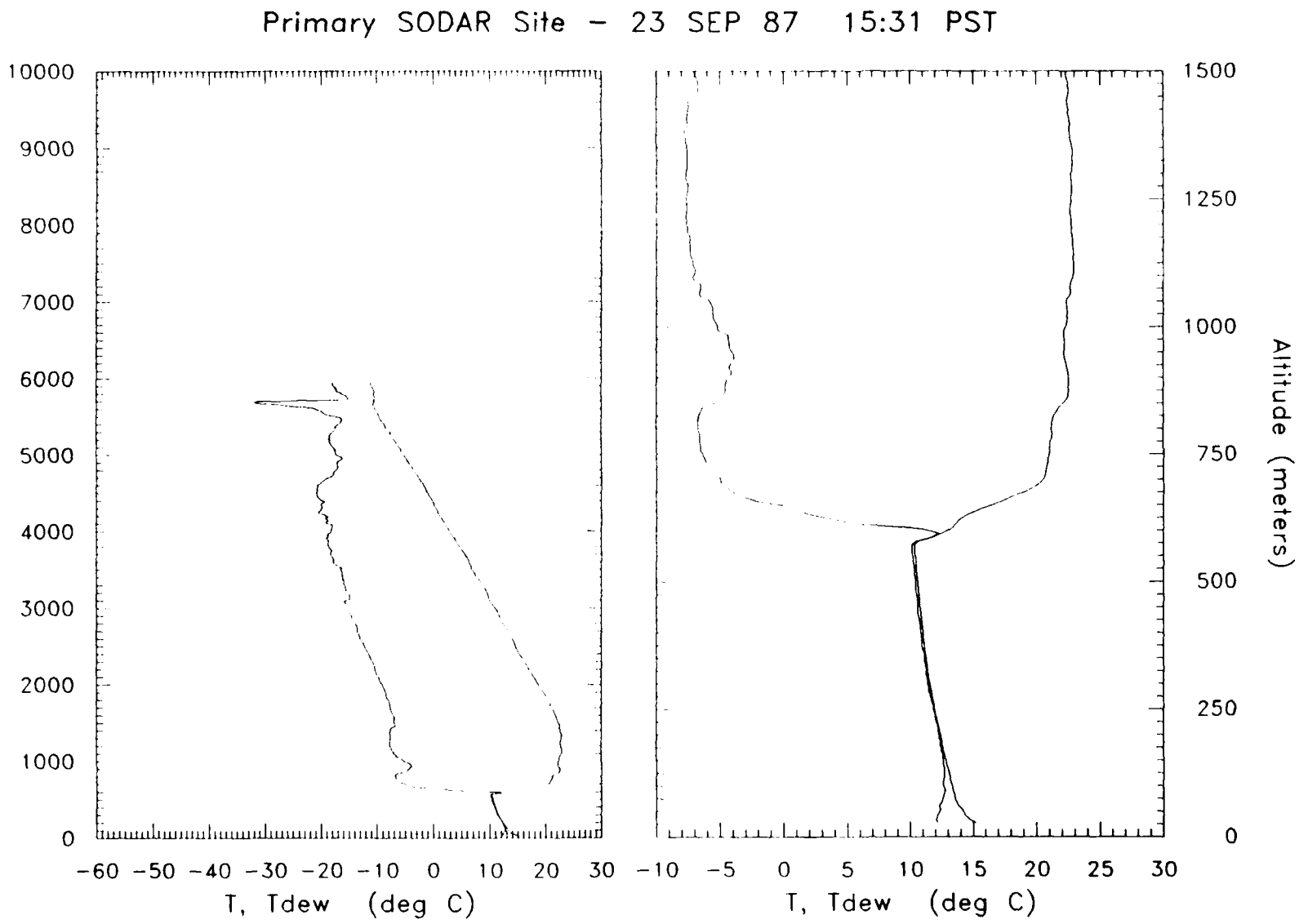

Primary SODAR Site - 22 SEP 87 07:28 PST
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
-60 -50 -40 -30 -20 -10 0 10 20 30
T, Tdew (deg C)
-10 -5 0 5 10 15 20 25 30
T, Tdew (deg C)
1500
1250
1000
750
500
250
0
Altitude (meters)


Primary SODAR Site - 22 SEP 87 10:45 PST
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
-60 -50 -40 -30 -20 -10 0 10 20 30
T, Tdew (deg C)
-10 -5 0 5 10 15 20 25 30
T, Tdew (deg C)
1500
1250
1000
750
500
250
0
Altitude (meters)

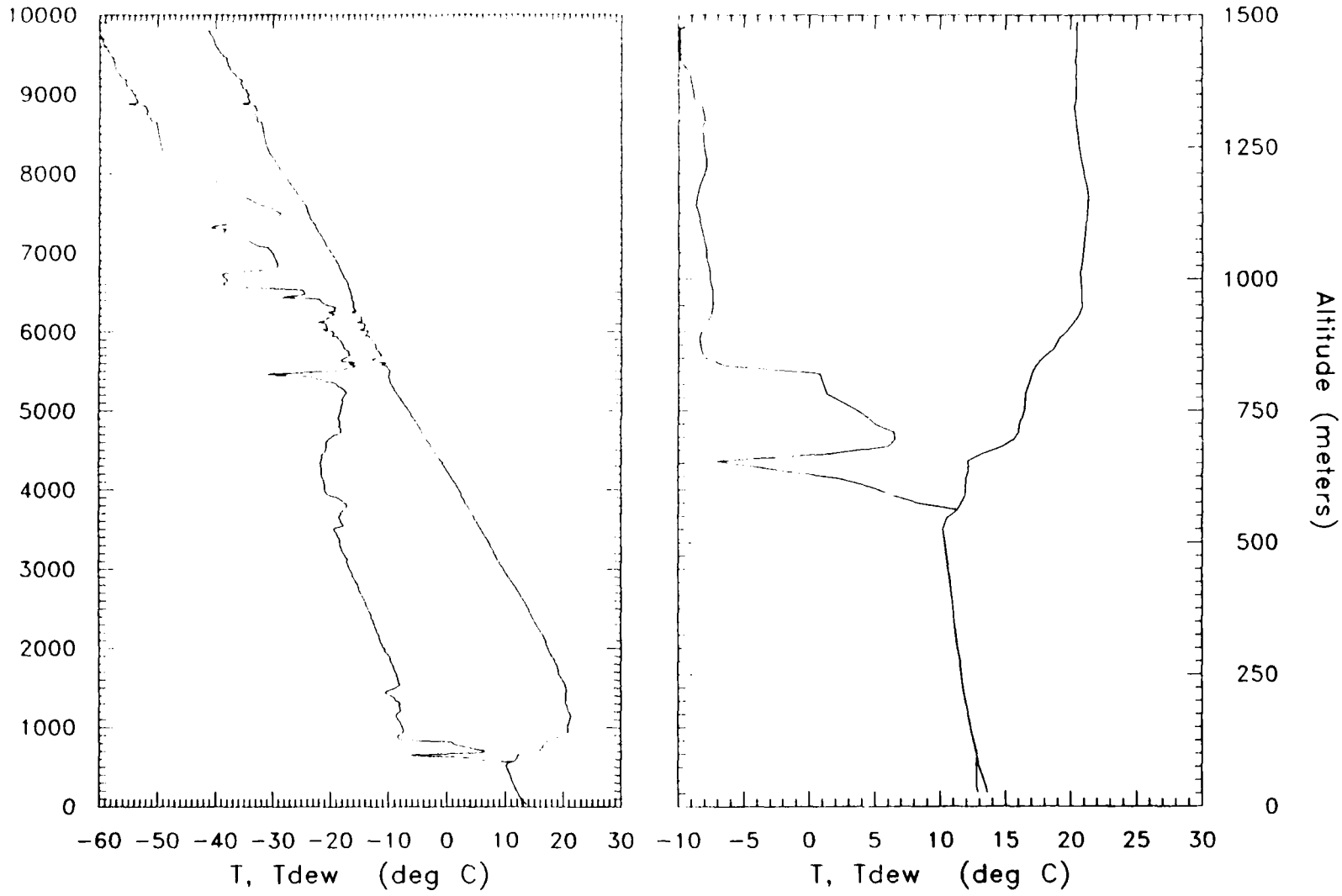
Primary SODAR Site - 22 SEP 87 15:46 PST



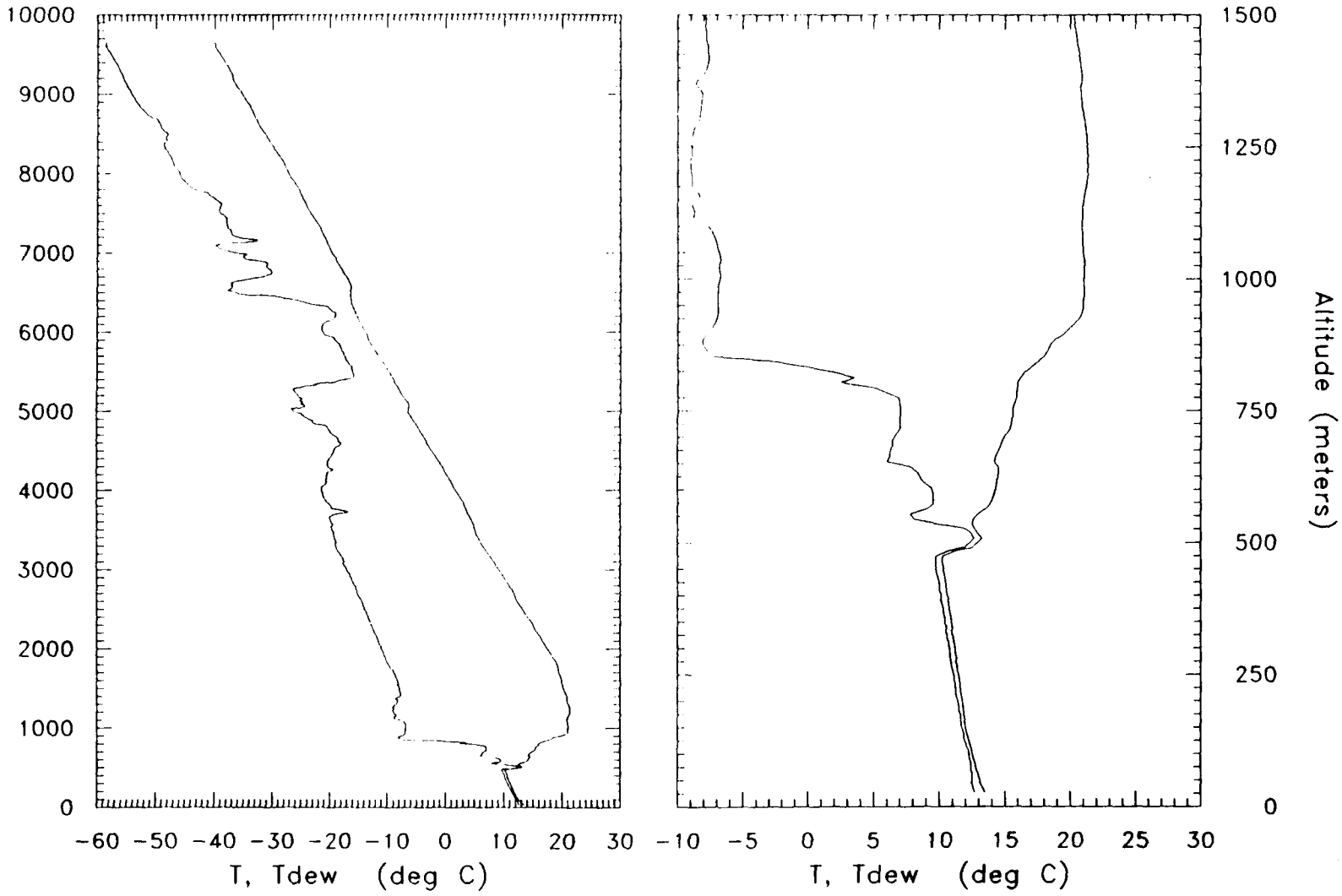

Primary SODAR Site - 23 SEP 87 12:09 PST
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
-60 -50 -40 -30 -20 -10 0 10 20 30
T, Tdew (deg C)
-10 -5 0 5 10 15 20 25 30
T, Tdew (deg C)
1500
1250
1000
750
500
250
0
Altitude (meters)

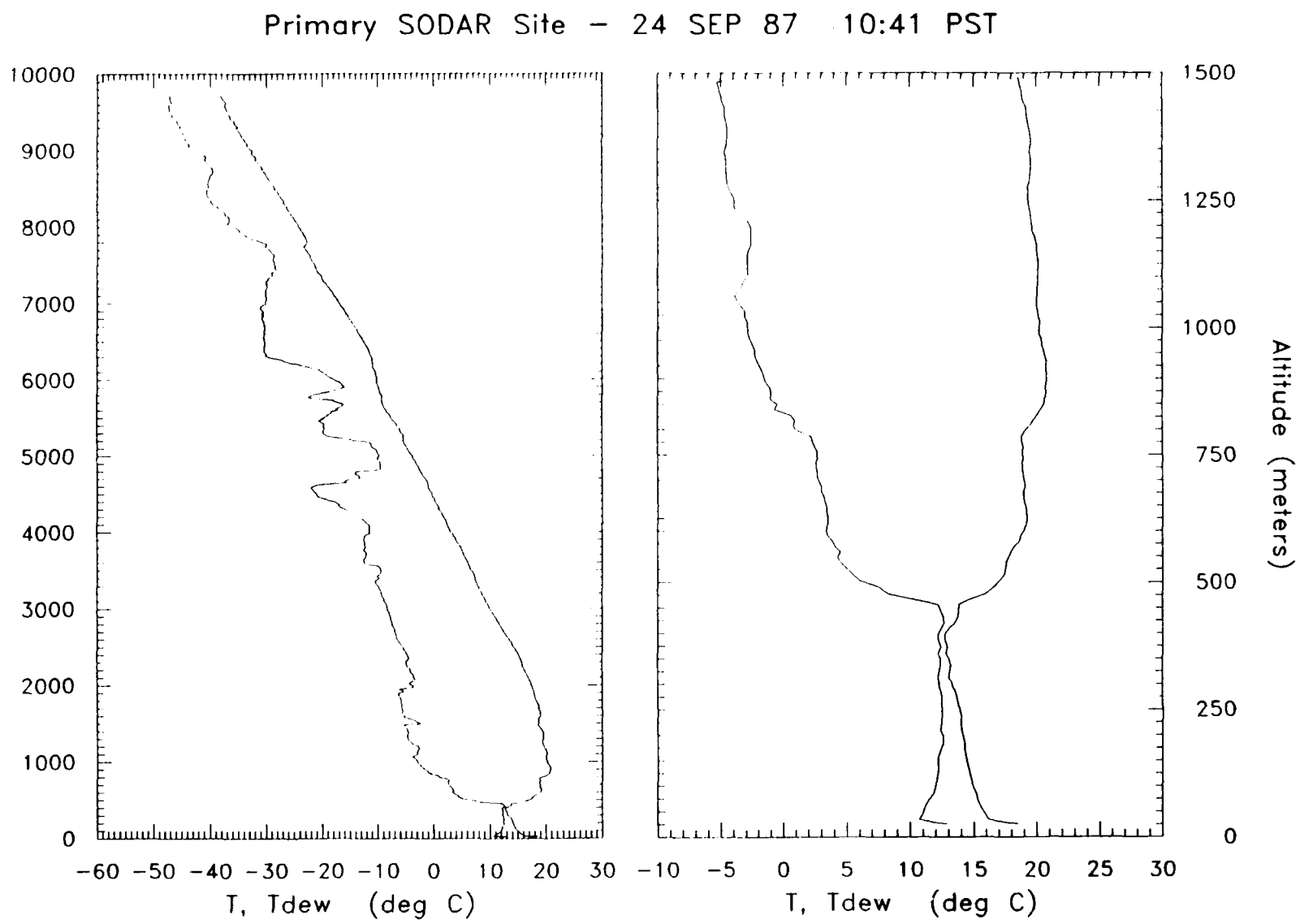

Primary SODAR Site - 23 SEP 87 15:31 PST
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
-60 -50 -40 -30 -20 -10 0 10 20 30
T, Tdew (deg C)
-10 -5 0 5 10 15 20 25 30
T, Tdew (deg C)
1500
1250
1000
750
500
250
0
Altitude (meters)

Primary SODAR Site - 23 SEP 87 18:47 PST

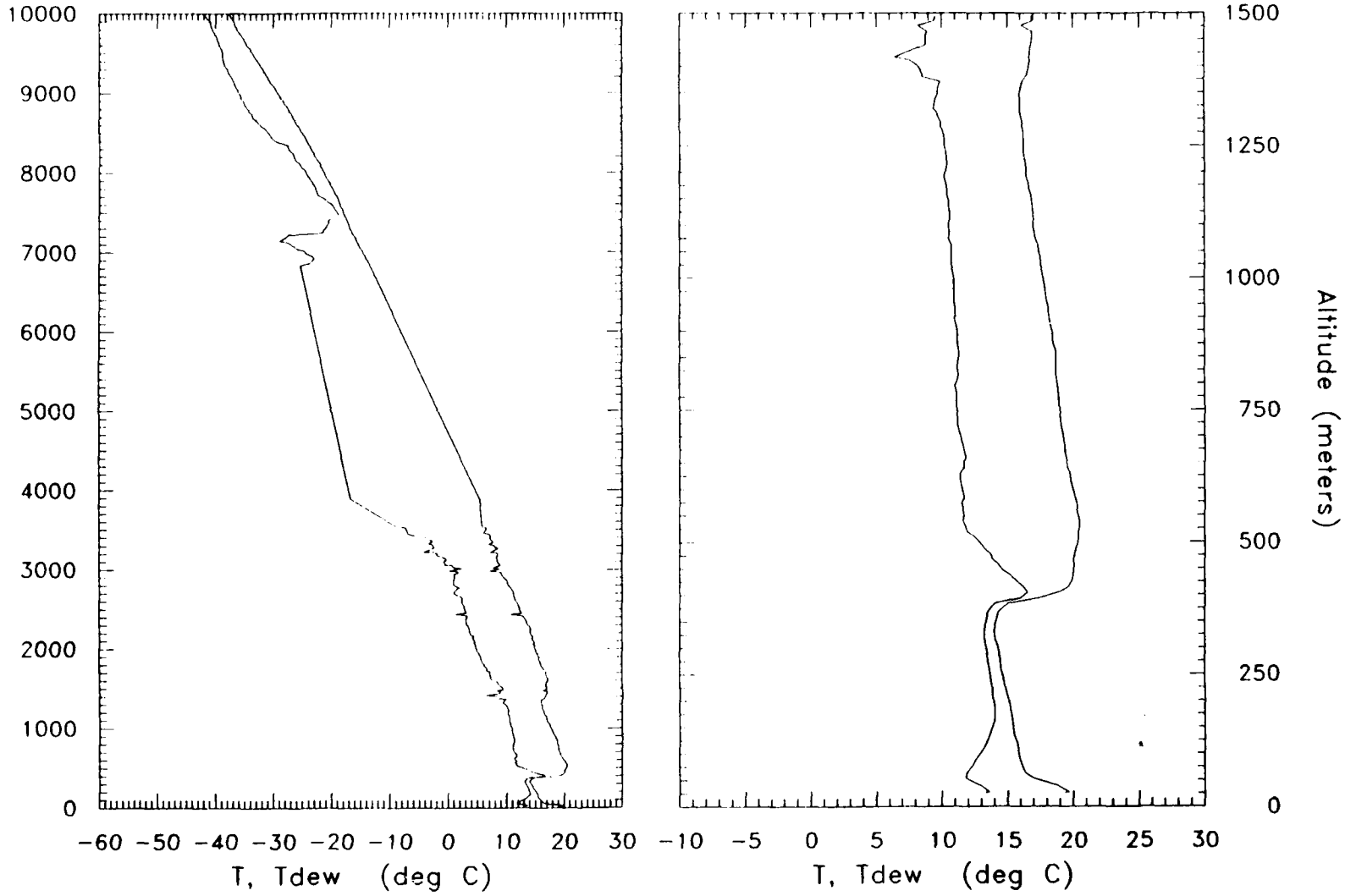


Primary SODAR Site - 23 SEP 87 20:32 PST

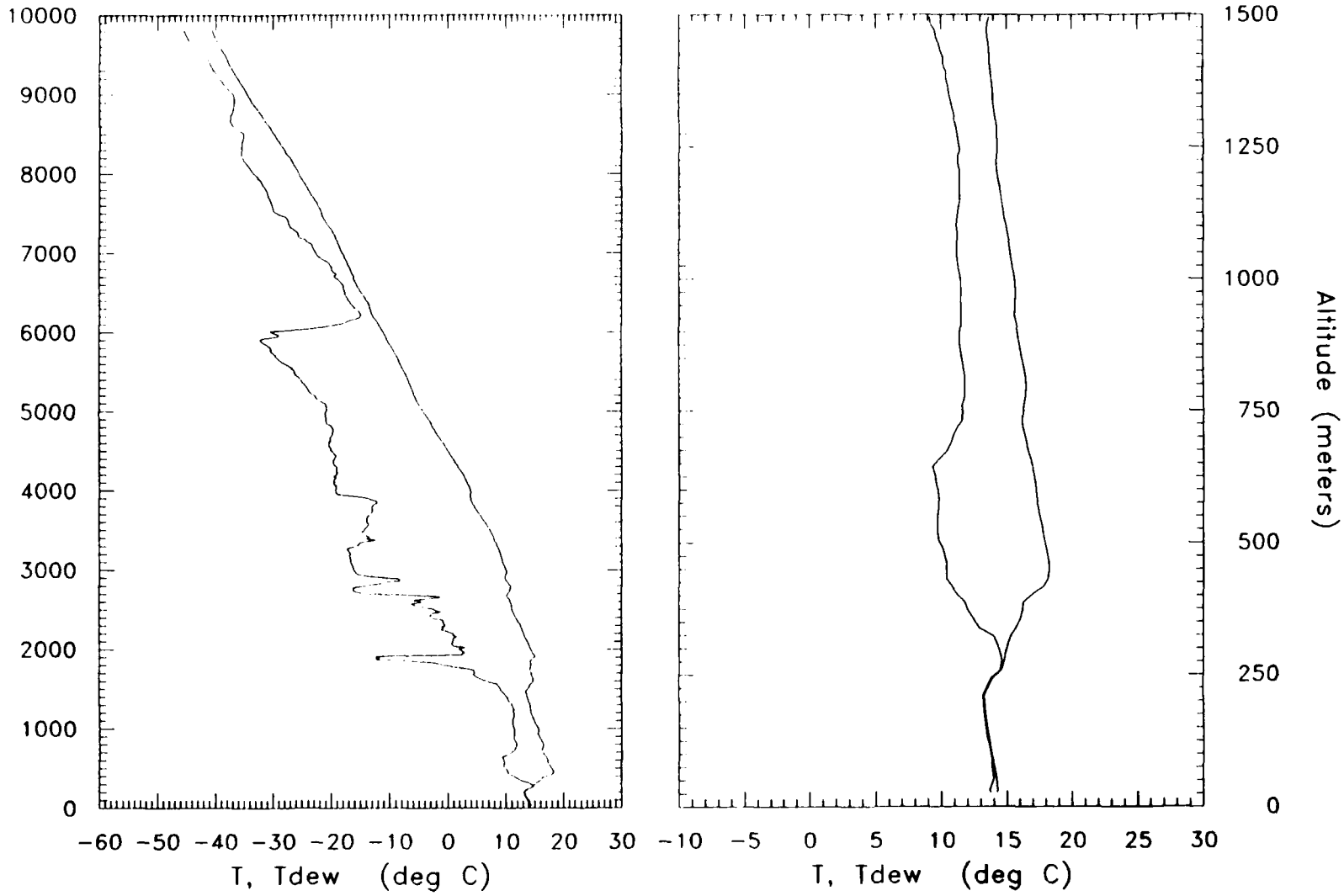


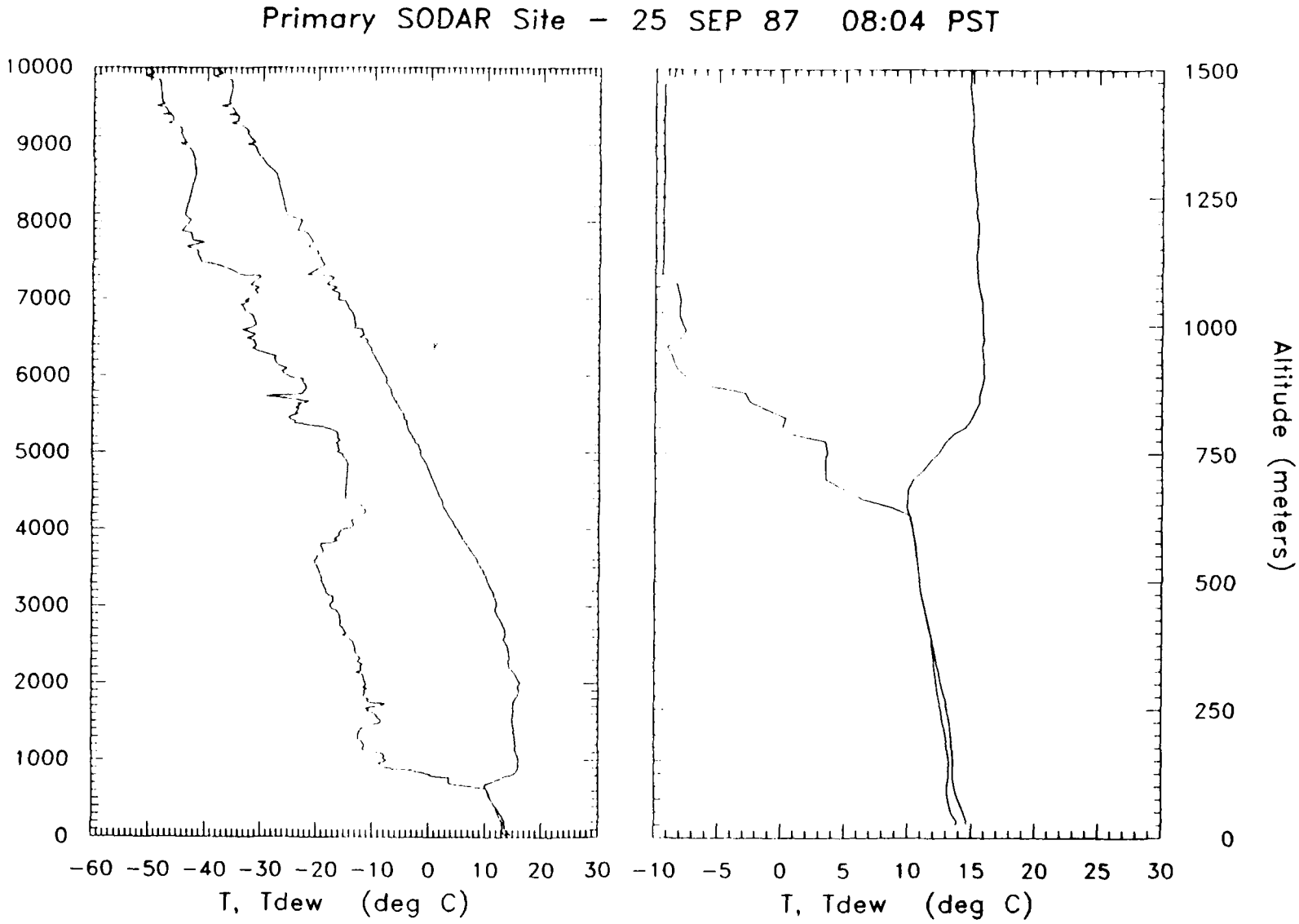

Primary SODAR Site - 24 SEP 87 10:41 PST
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
-60 -50 -40 -30 -20 -10 0 10 20 30
T, Tdew (deg C)
-10 -5 0 5 10 15 20 25 30
T, Tdew (deg C)
1500
1250
1000
750
500
250
0
Altitude (meters)

Primary SODAR Site - 24 SEP 87 16:02 PST

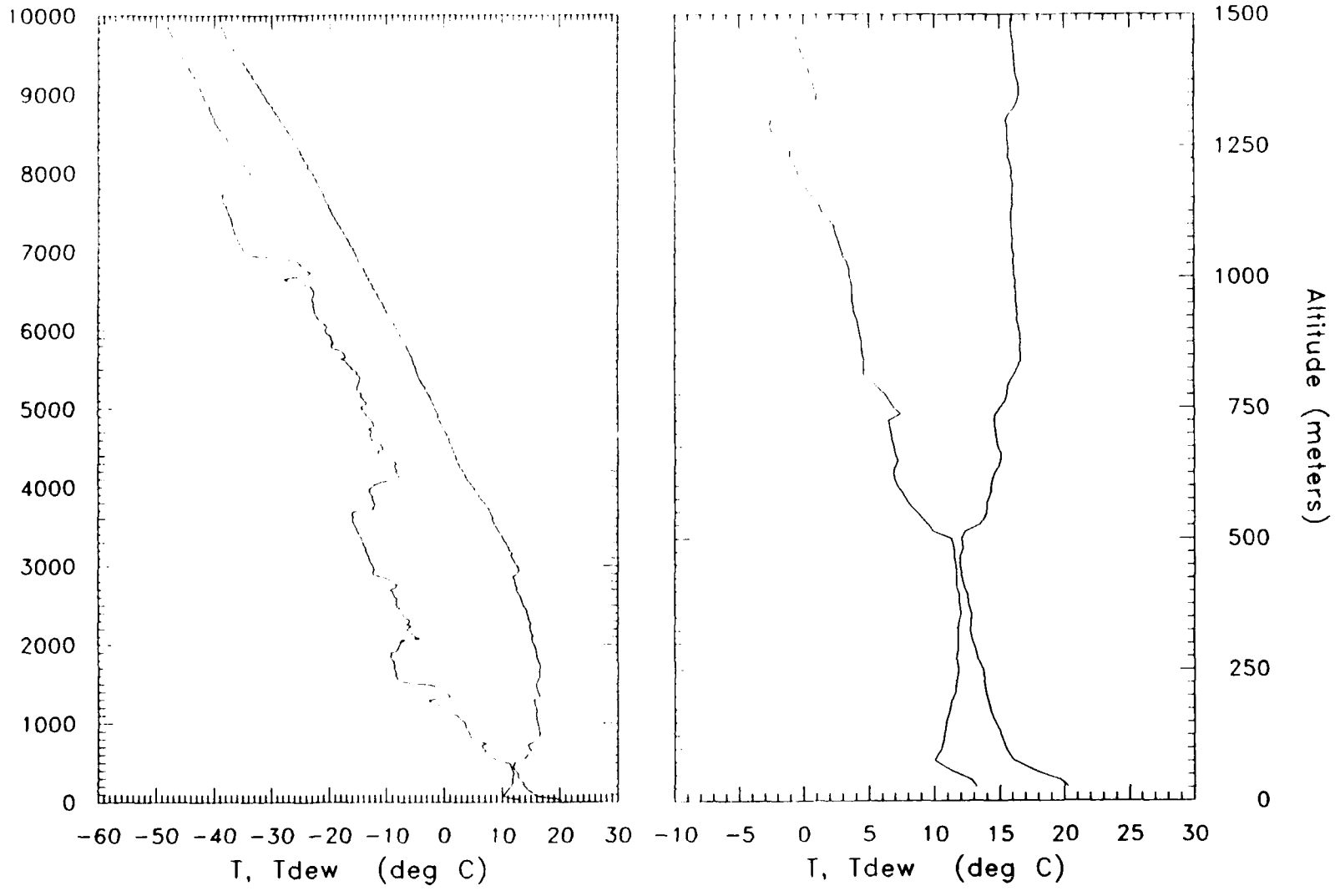


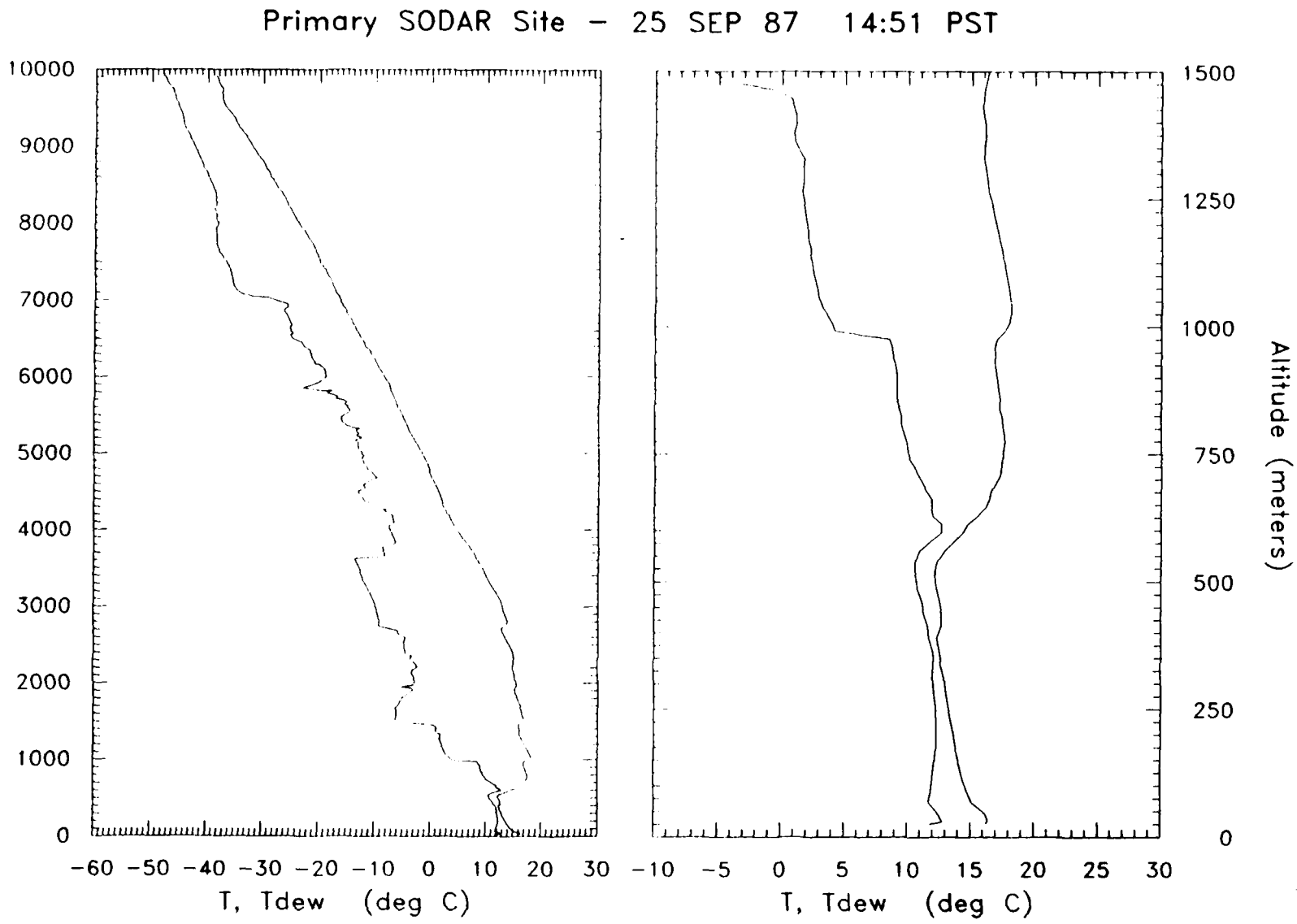
Primary SODAR Site - 24 SEP 87 19:27 PST

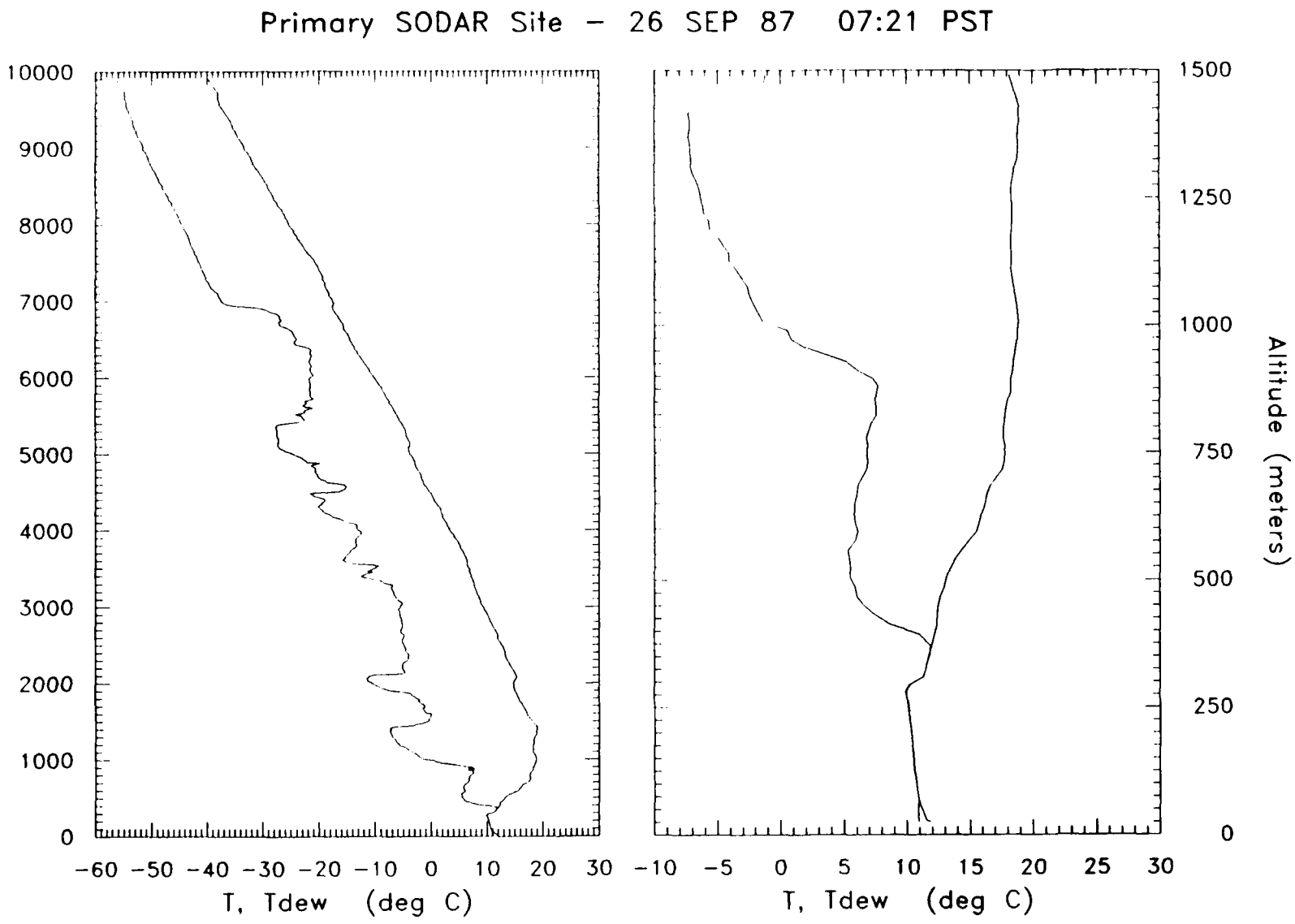


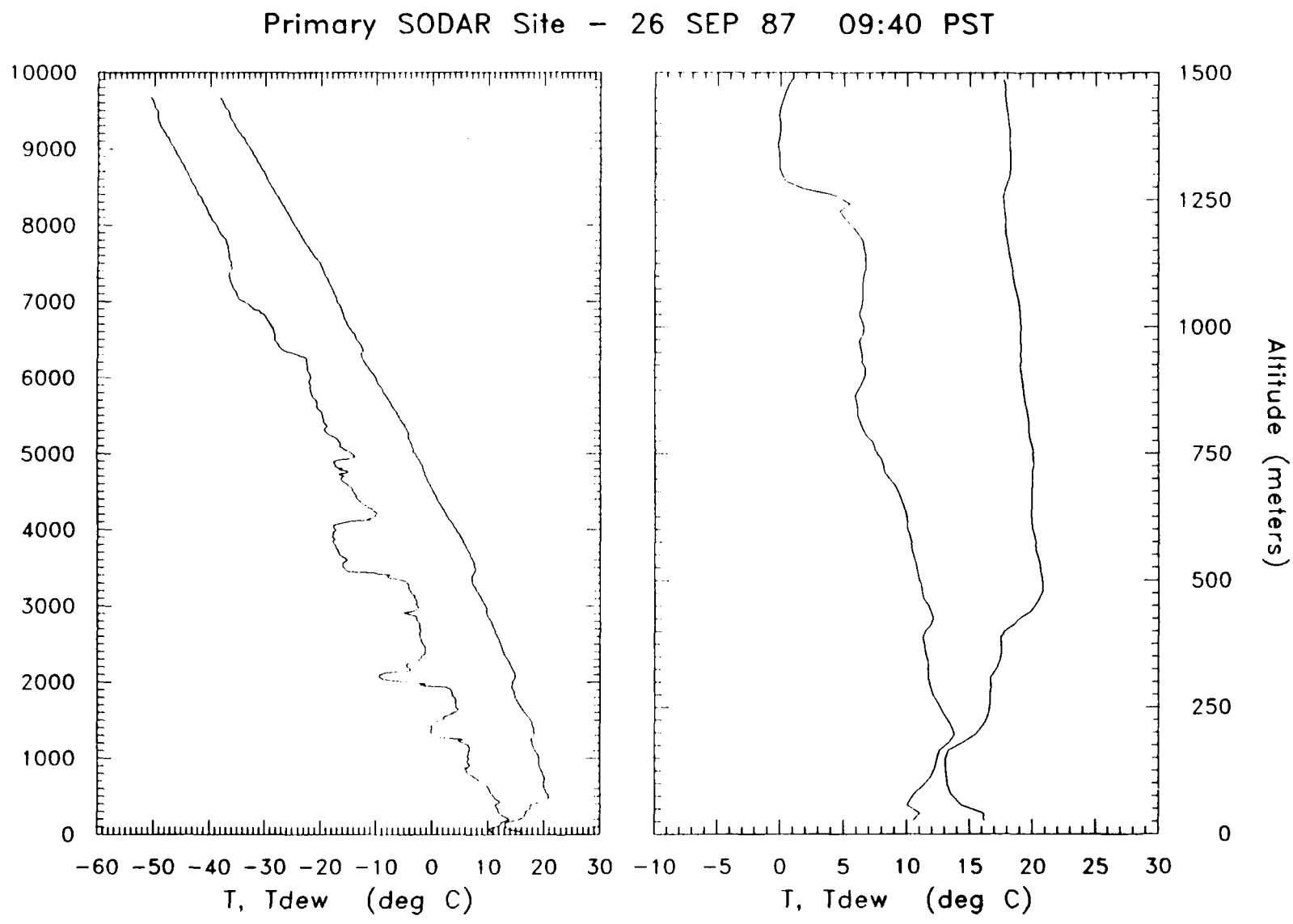

Primary SODAR Site - 25 SEP 87 08:04 PST
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
-60 -50 -40 -30 -20 -10 0 10 20 30
T, Tdew (deg C)
-10 -5 0 5 10 15 20 25 30
T, Tdew (deg C)
1500
1250
1000
750
500
250
0
Altitude (meters)

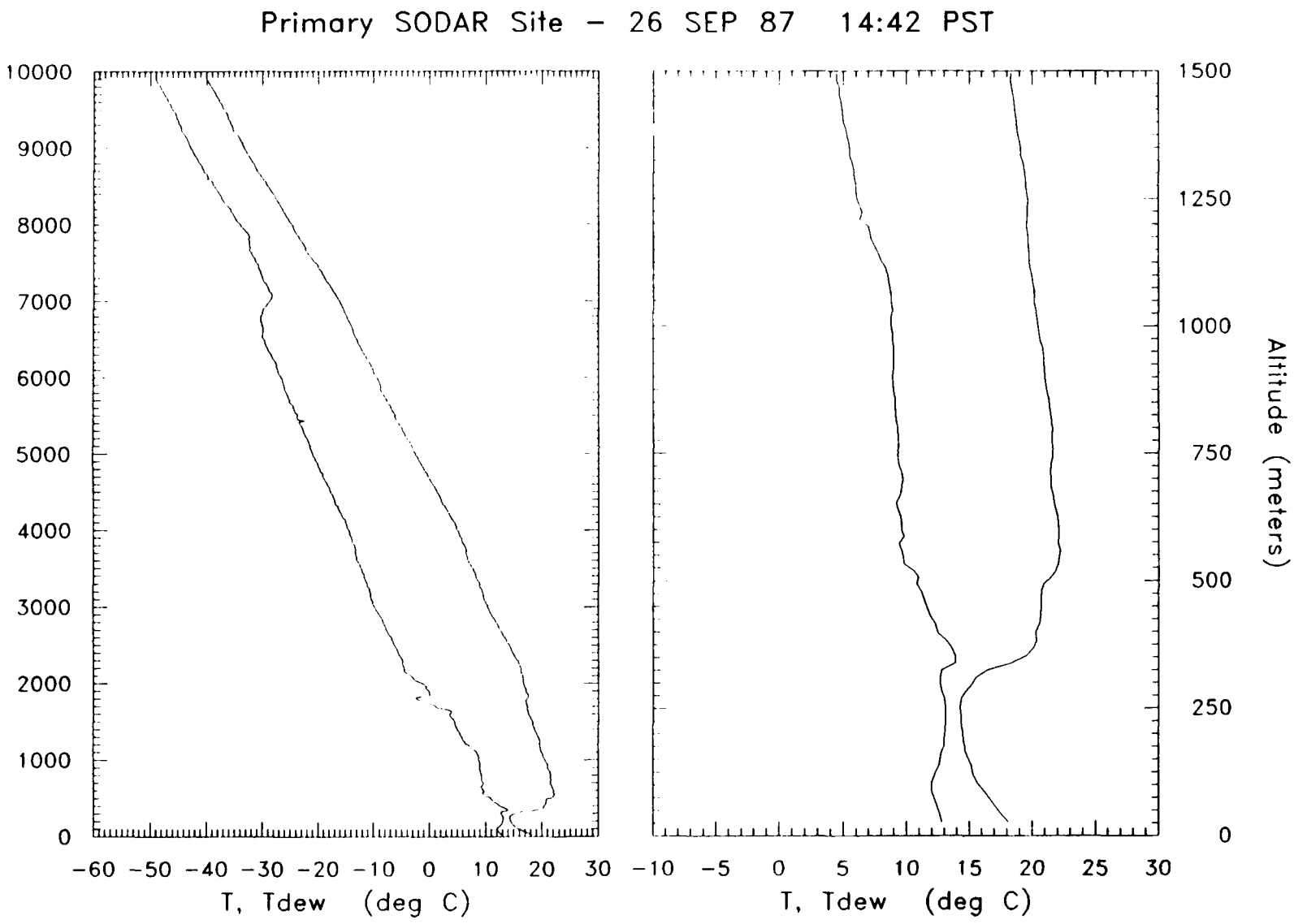
Primary SODAR Site - 25 SEP 87 11:44 PST

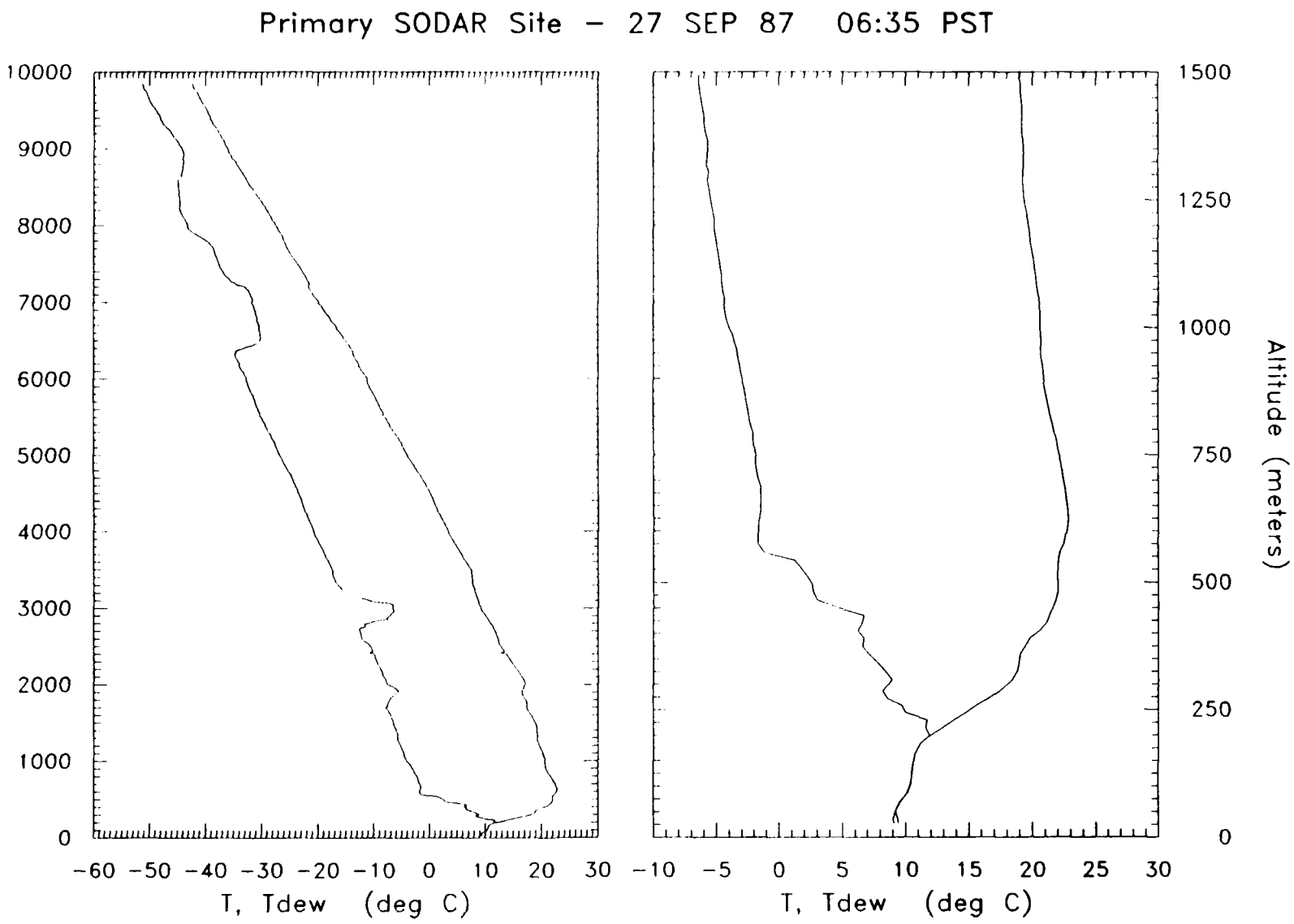



Primary SODAR Site - 25 SEP 87 14:51 PST
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
-60 -50 -40 -30 -20 -10 0 10 20 30
T, Tdew (deg C)
-10 -5 0 5 10 15 20 25 30
T, Tdew (deg C)
1500
1250
1000
750
500
250
0
Altitude (meters)

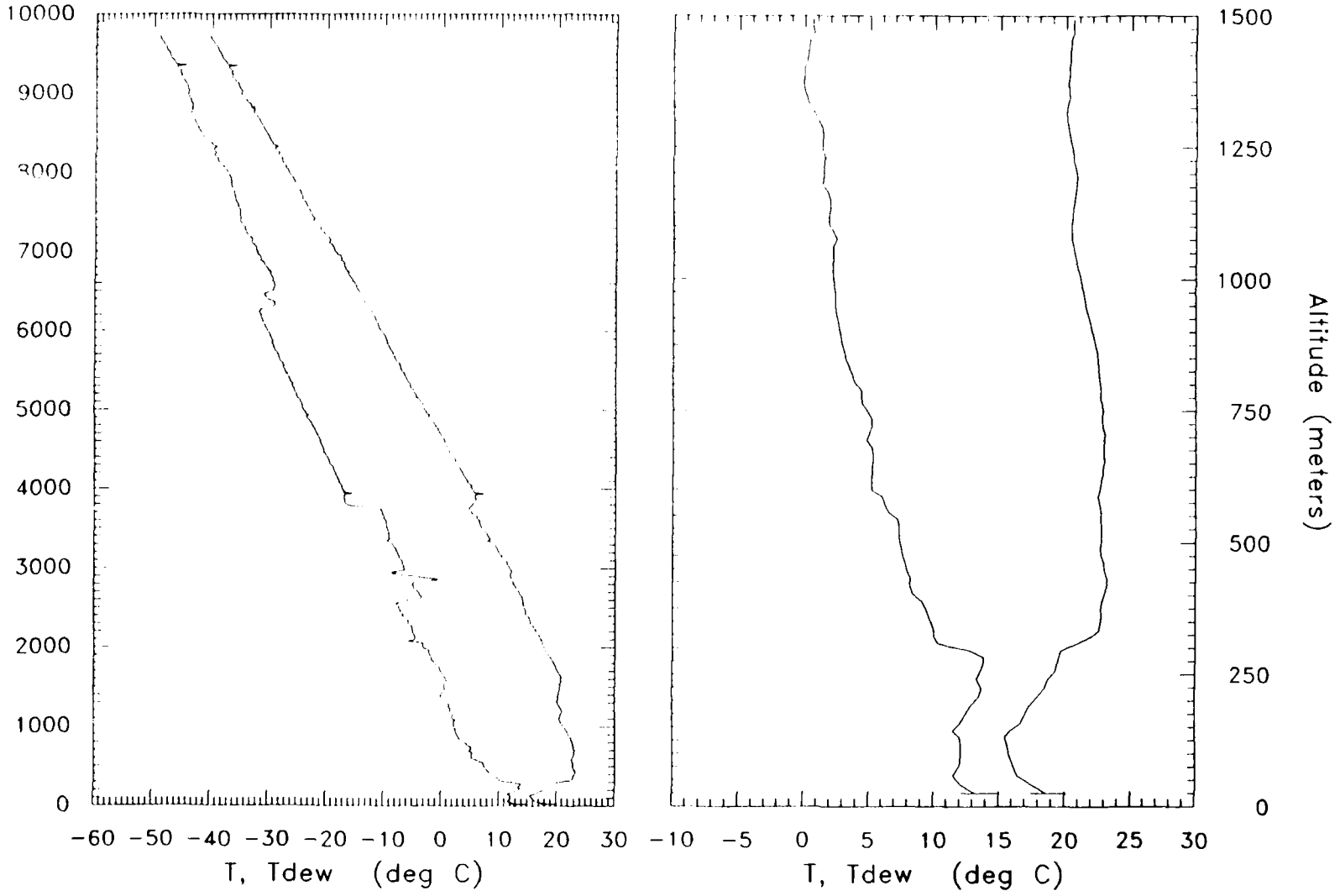

Primary SODAR Site - 26 SEP 87 07:21 PST
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
-60 -50 -40 -30 -20 -10 0 10 20 30
T, Tdew (deg C)
-10 -5 0 5 10 15 20 25 30
T, Tdew (deg C)
1500
1250
1000
750
500
250
0
Altitude (meters)


Primary SODAR Site - 26 SEP 87 09:40 PST
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
-60 -50 -40 -30 -20 -10 0 10 20 30
T, Tdew (deg C)
-10 -5 0 5 10 15 20 25 30
T, Tdew (deg C)
1500
1250
1000
750
500
250
0
Altitude (meters)

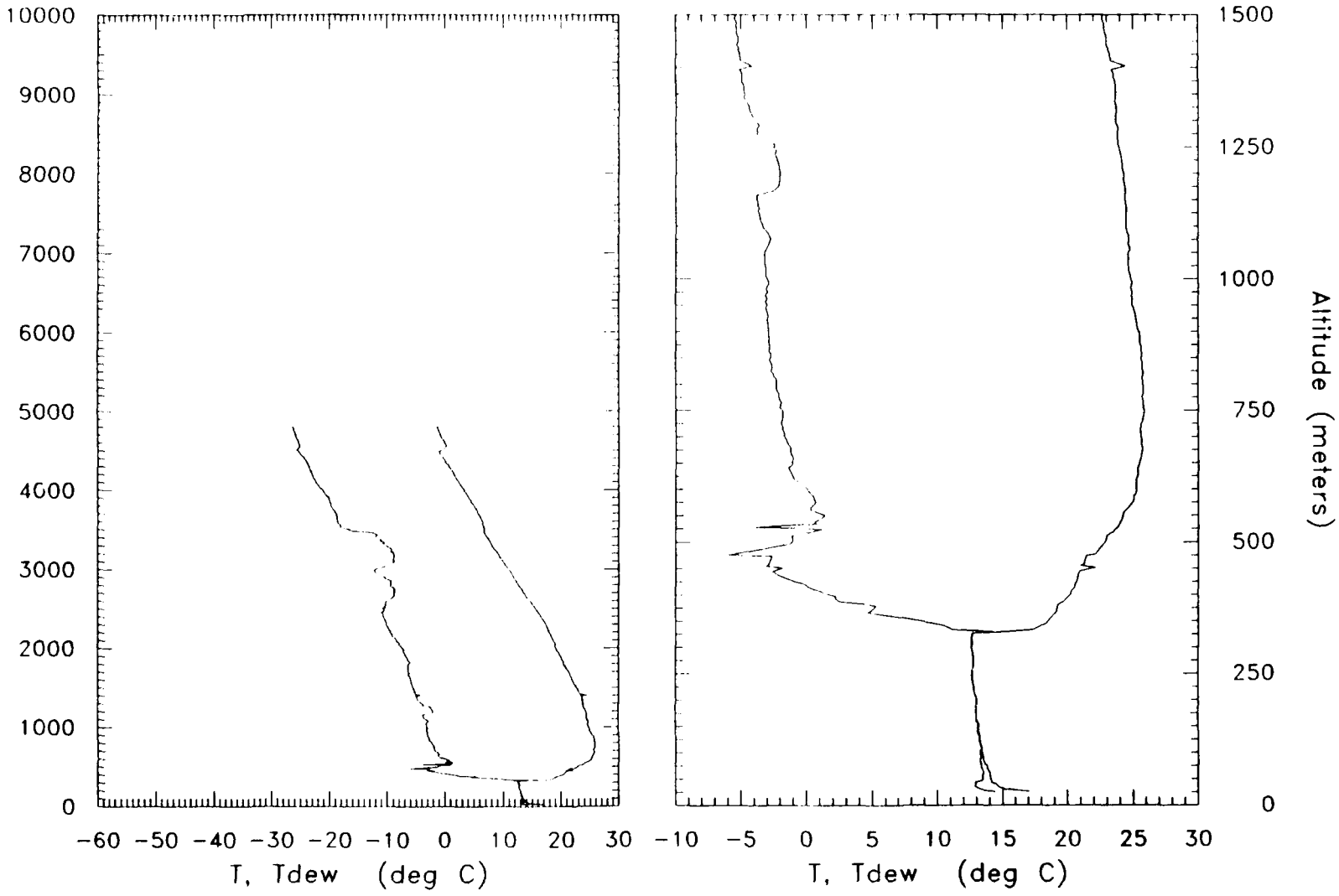

Primary SODAR Site - 26 SEP 87 14:42 PST
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
-60 -50 -40 -30 -20 -10 0 10 20 30
T, Tdew (deg C)
-10 -5 0 5 10 15 20 25 30
T, Tdew (deg C)
1500
1250
1000
750
500
250
0
Altitude (meters)

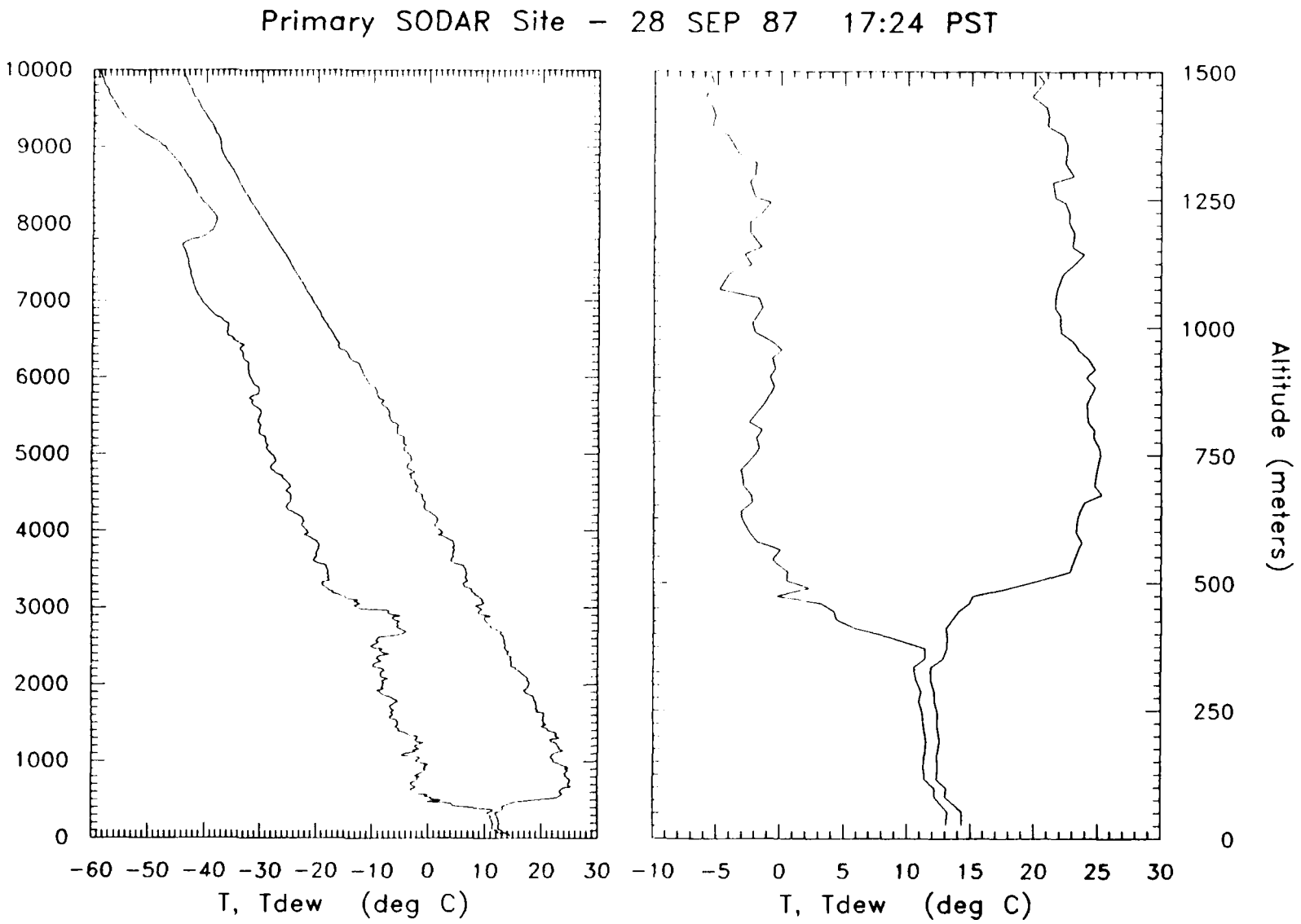

Primary SODAR Site - 27 SEP 87 06:35 PST
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
-60 -50 -40 -30 -20 -10 0 10 20 30
T, Tdew (deg C)
-10 -5 0 5 10 15 20 25 30
T, Tdew (deg C)
1500
1250
1000
750
500
250
0
Altitude (meters)

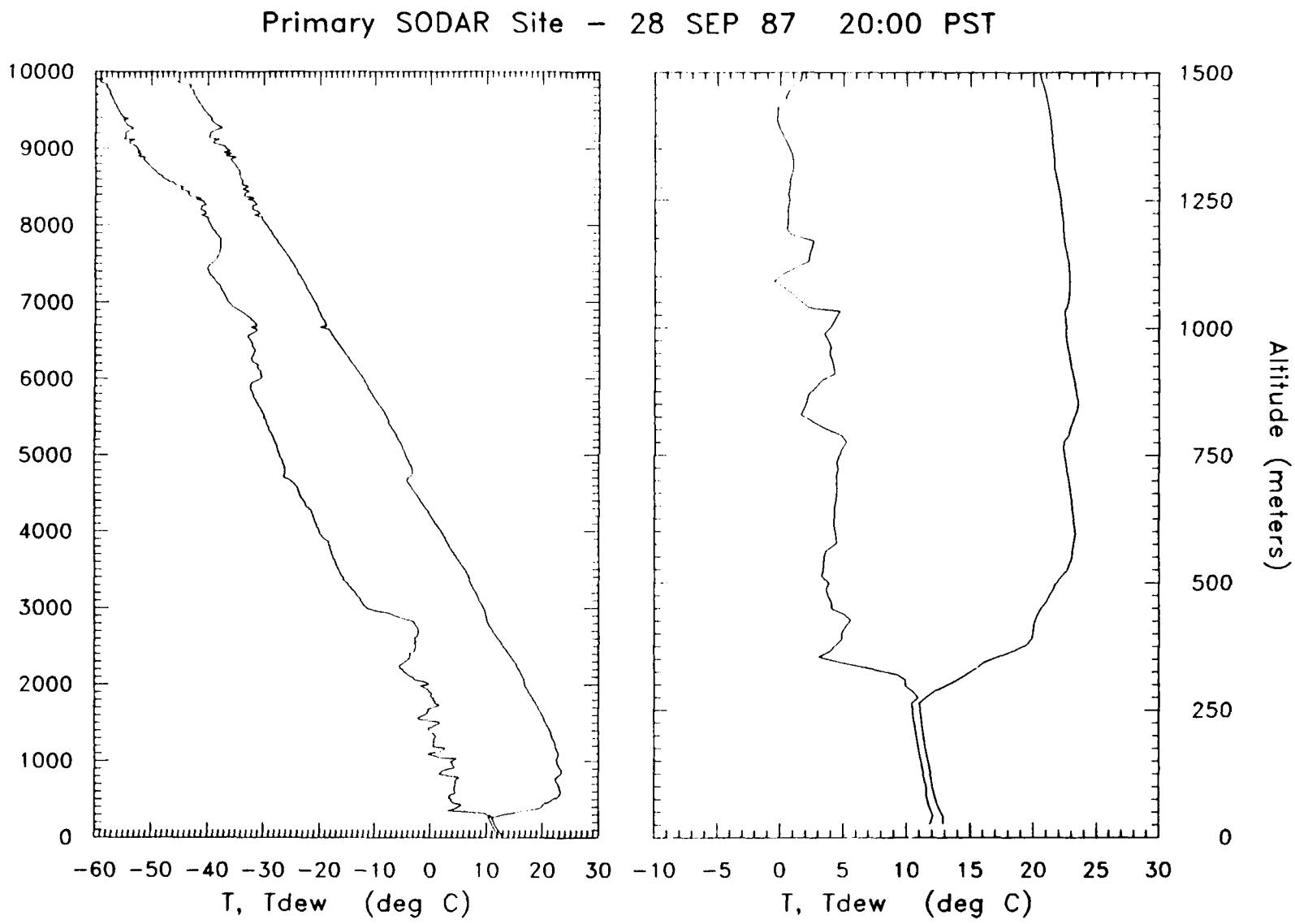
Primary SODAR Site – 27 SEP 87 11:36 PST



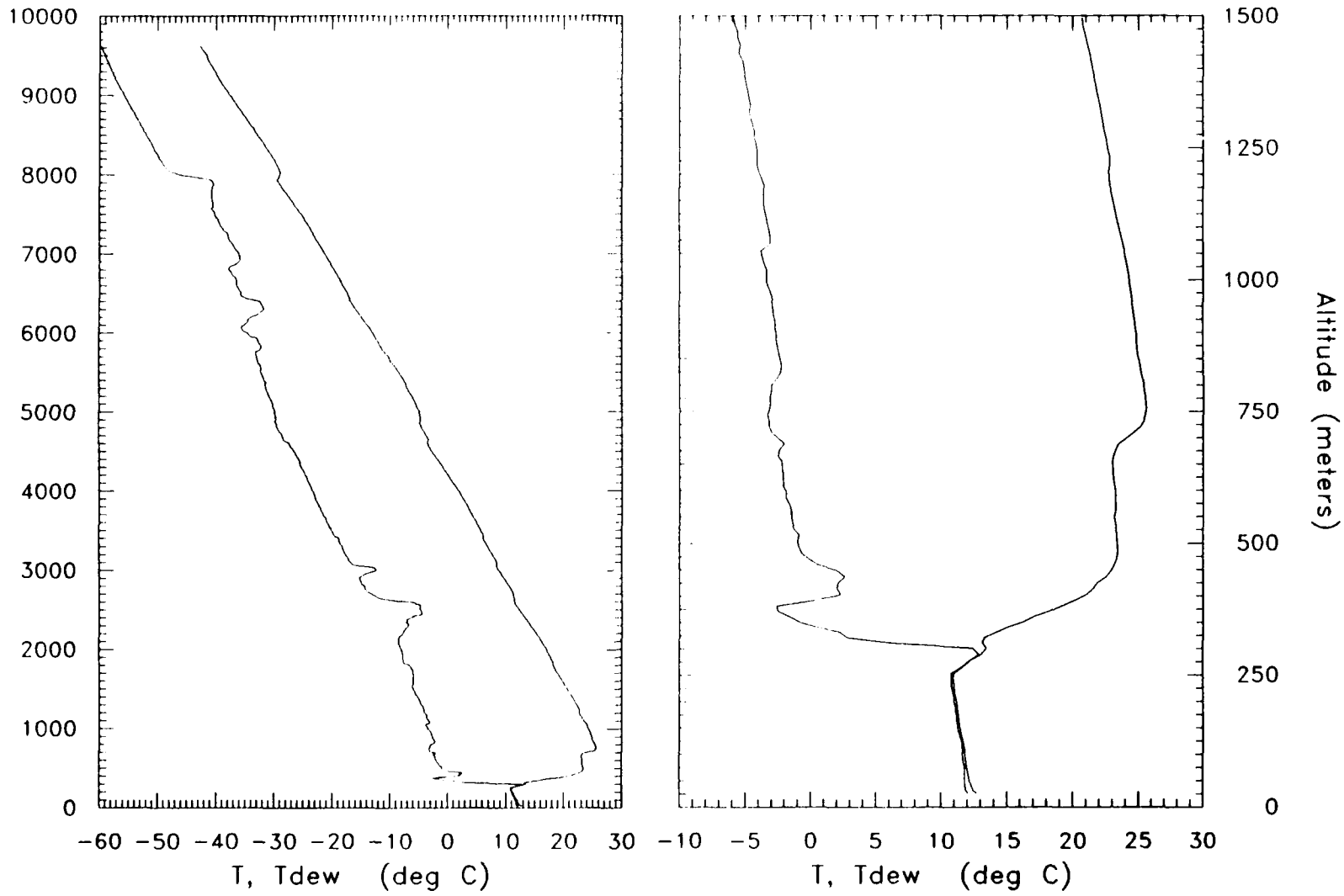
Primary SODAR Site - 28 SEP 87 13:47 PST




Primary SODAR Site - 28 SEP 87 17:24 PST
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
-60 -50 -40 -30 -20 -10 0 10 20 30
T, Tdew (deg C)
-10 -5 0 5 10 15 20 25 30
T, Tdew (deg C)
1500
1250
1000
750
500
250
0
Altitude (meters)


Primary SODAR Site - 28 SEP 87 20:00 PST
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
-60 -50 -40 -30 -20 -10 0 10 20 30
T, Tdew (deg C)
-10 -5 0 5 10 15 20 25 30
T, Tdew (deg C)
1500
1250
1000
750
500
250
0
Altitude (meters)

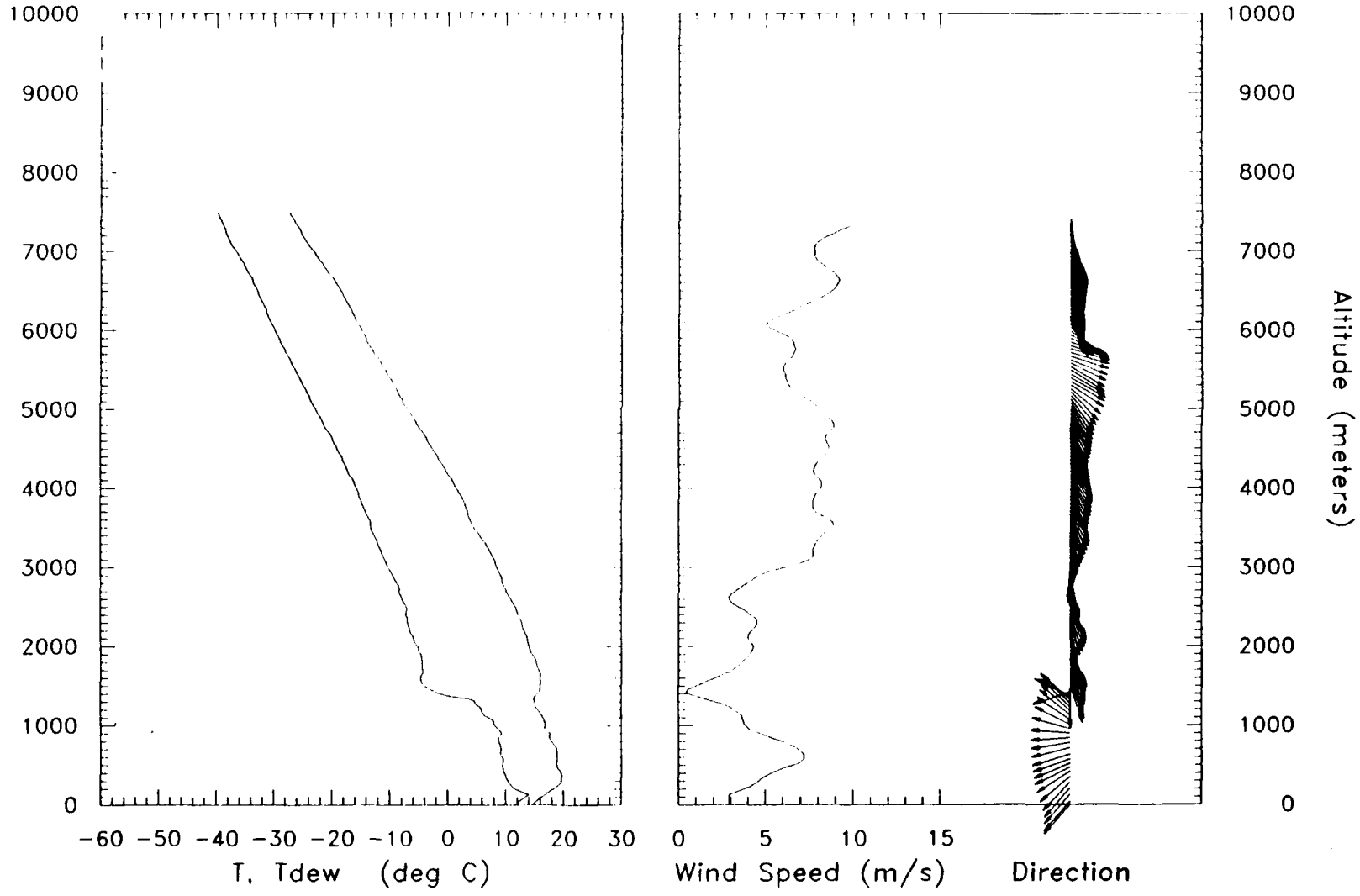
Primary SODAR Site - 28 SEP 87 21:49 PST



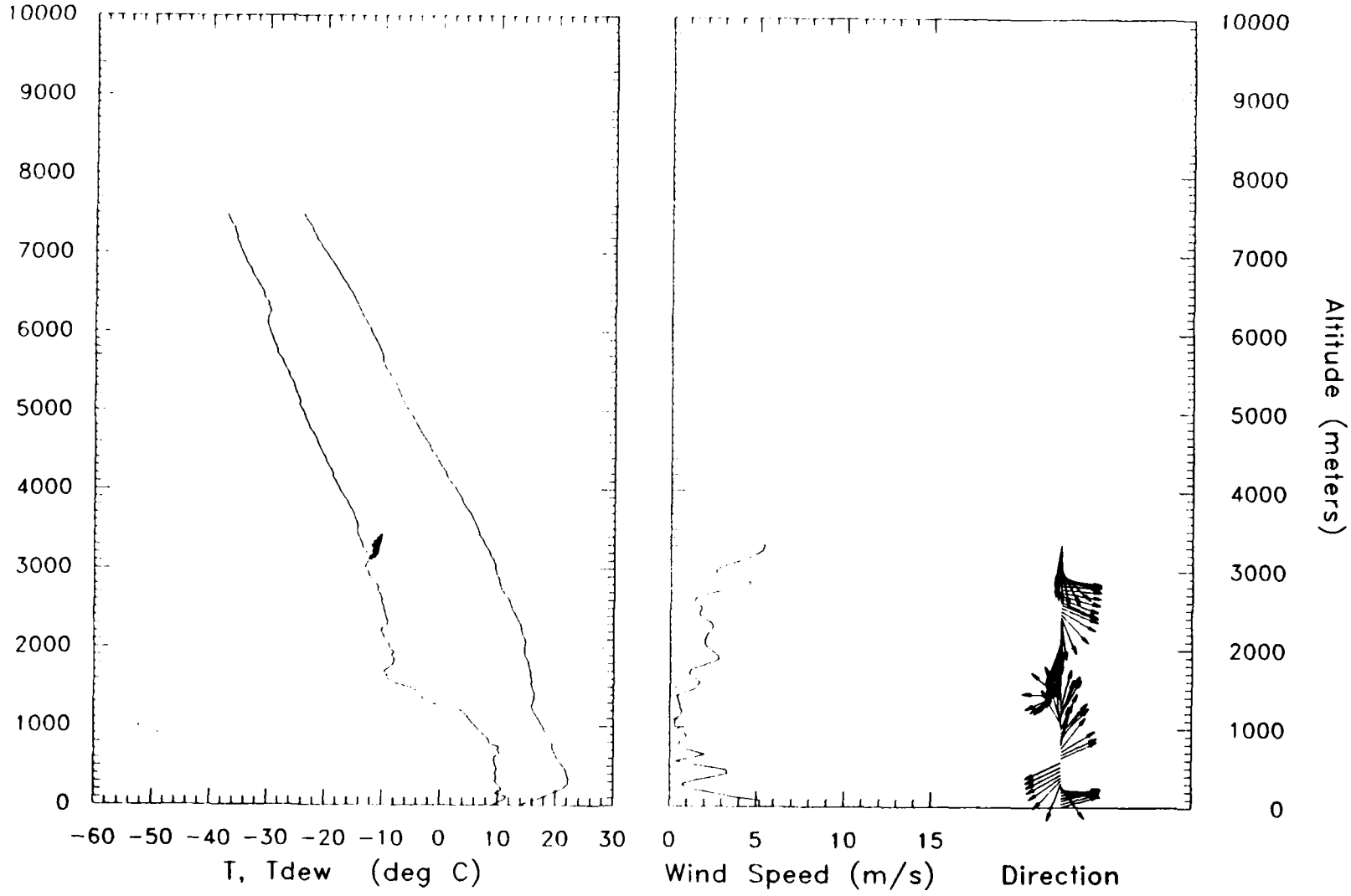
17. RAWINSONDE PROFILES (COMPLETE), SILVER PRINCE

This section presents the 29 thermodynamic and dynamic profiles collected by rawinsondes launched from the R/V Silver Prince. The profiles are presented in their entirety. The left panel for each page contains the a temperature and dewpoint profiles, and the right panel contains wind speed and direction. Note that no dewpoint data were available from the 1613 PST launch of 24 September, and no wind data were obtained from the 1258 PST launch of 25 September.

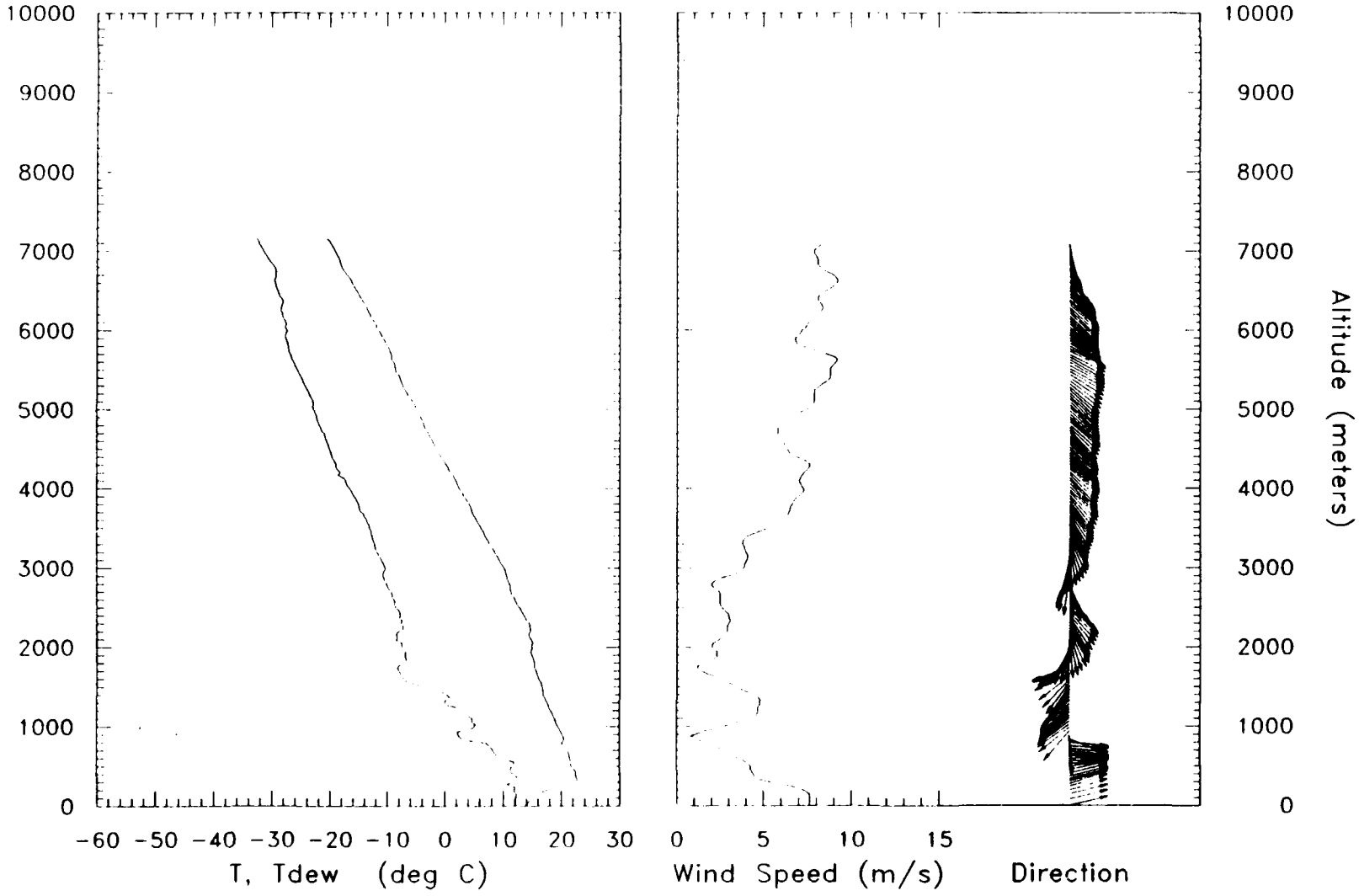
R/V Silver Prince: 0.2 km S, 11.2 km W of Moss Landing - 16 SEP 87 09:35 PST



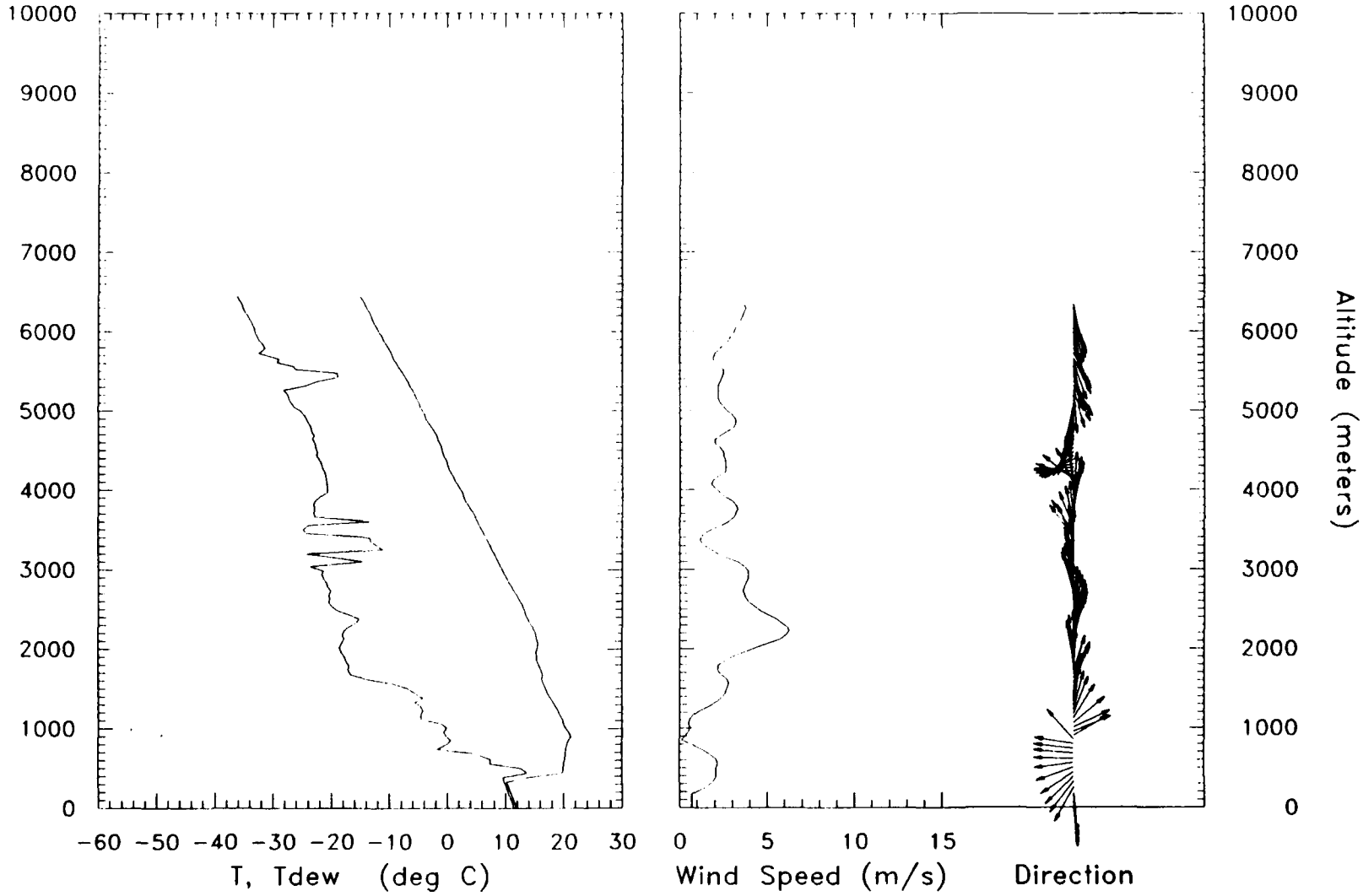
R/V Silver Prince: 0.2 km S, 11.2 km W of Moss Landing - 16 SEP 87 11:57 PST



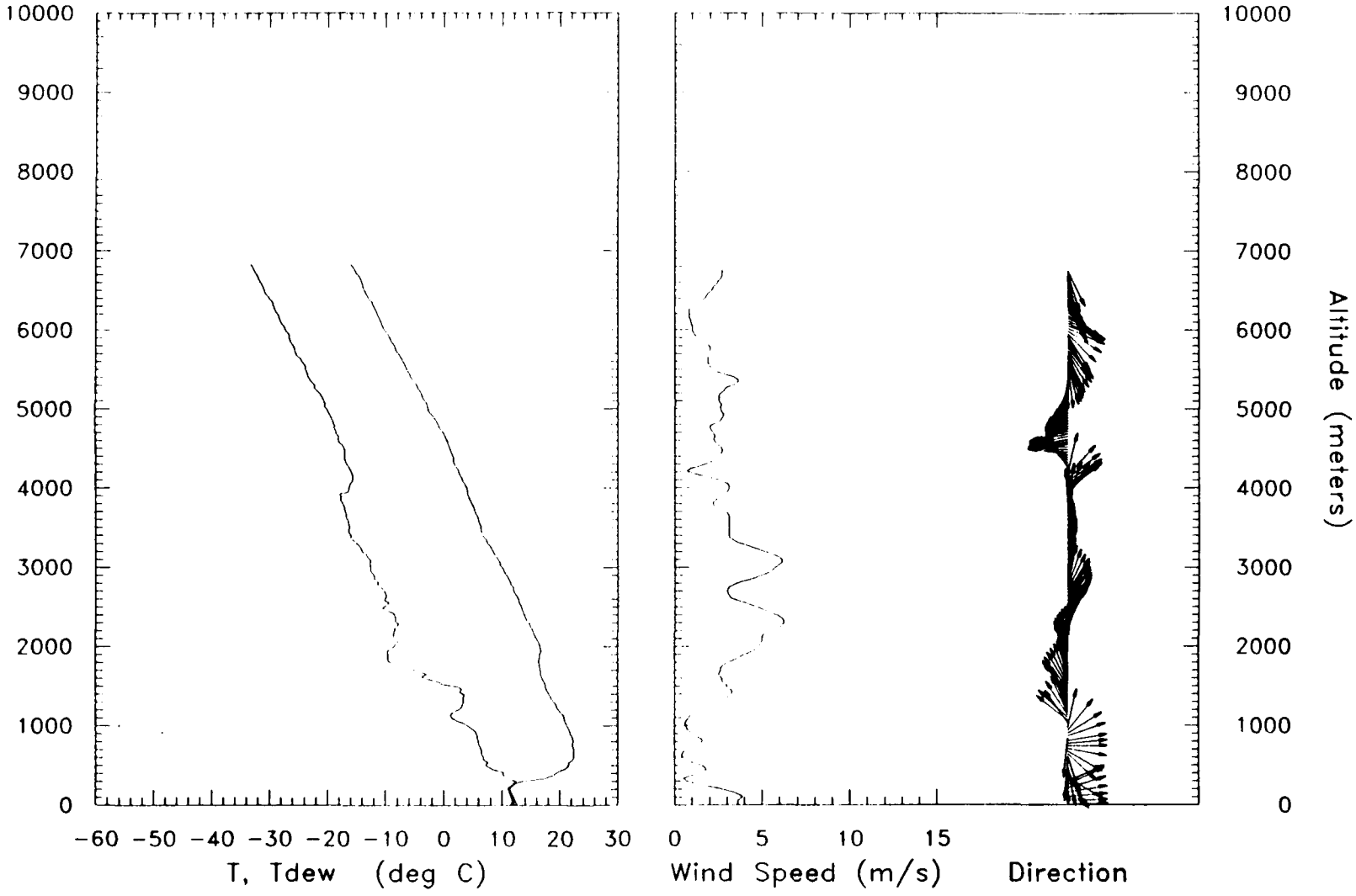
R/V Silver Prince: 0.2 km S, 11.4 km W of Moss Landing – 16 SEP 87 14:09 PST



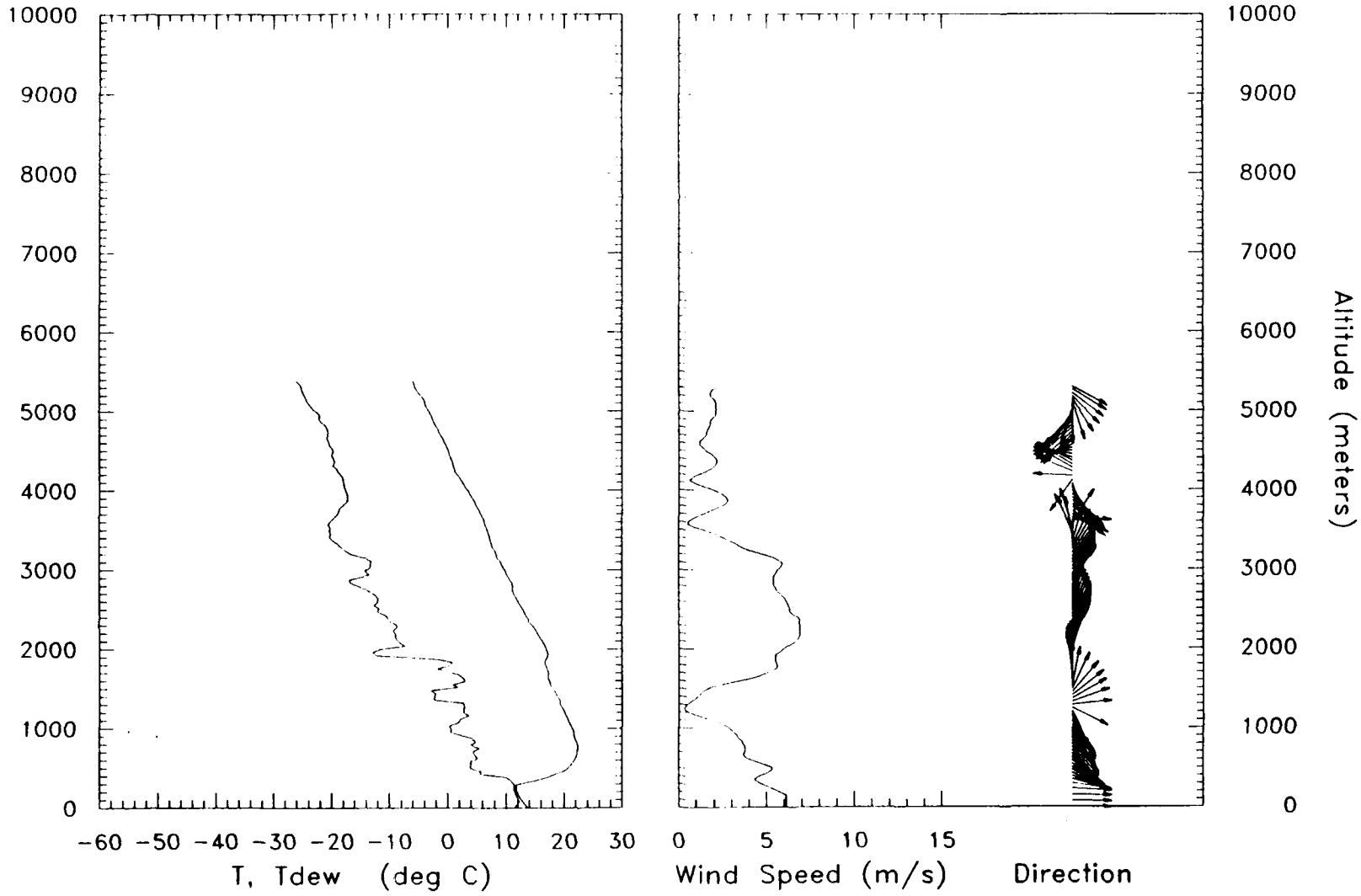
R/V Silver Prince: 0.1 km S, 26.0 km W of Moss Landing - 18 SEP 87 09:10 PST



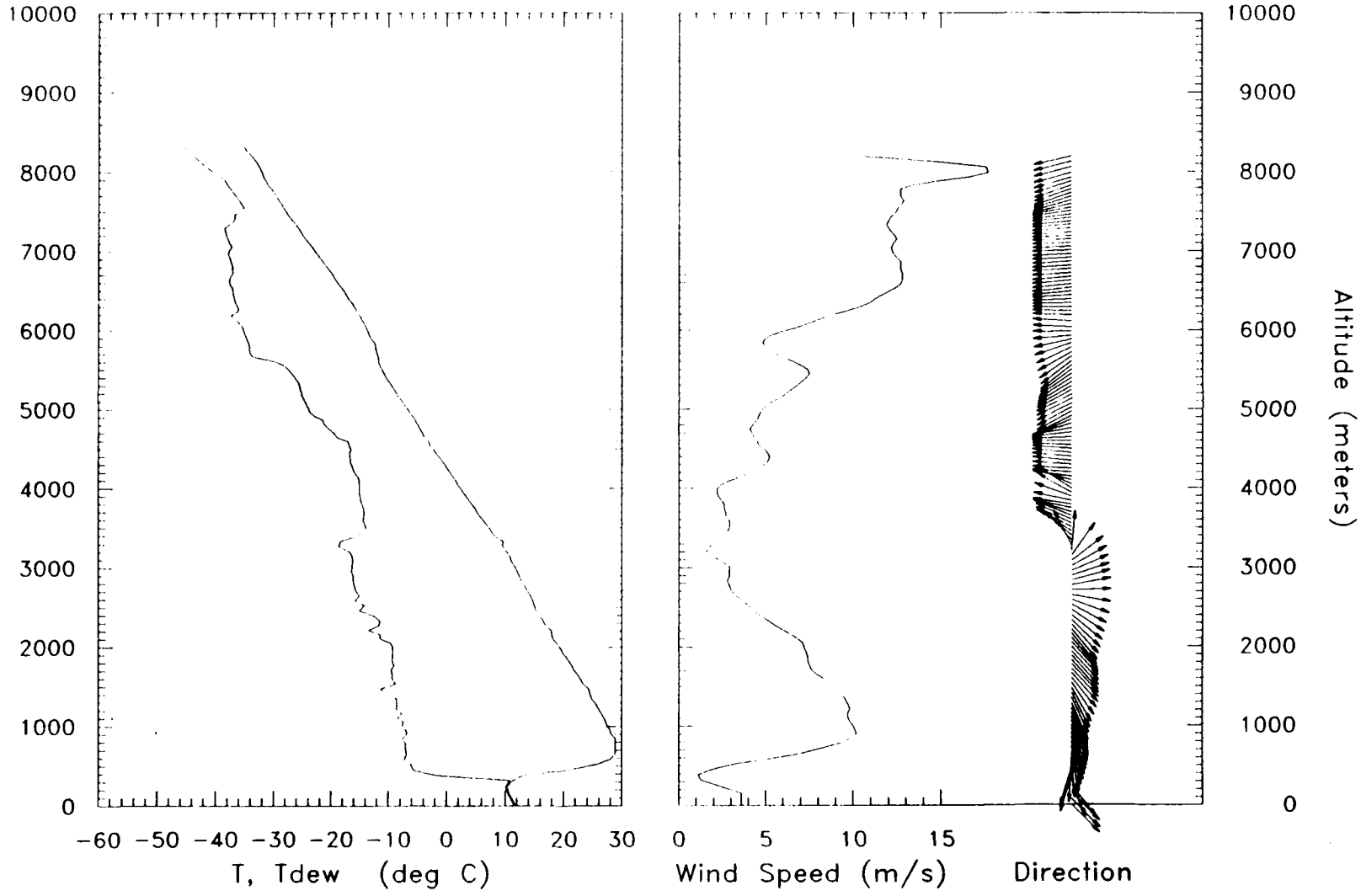
R/V Silver Prince: 0.2 km S, 11.4 km W of Moss Landing - 18 SEP 87 11:44 PST



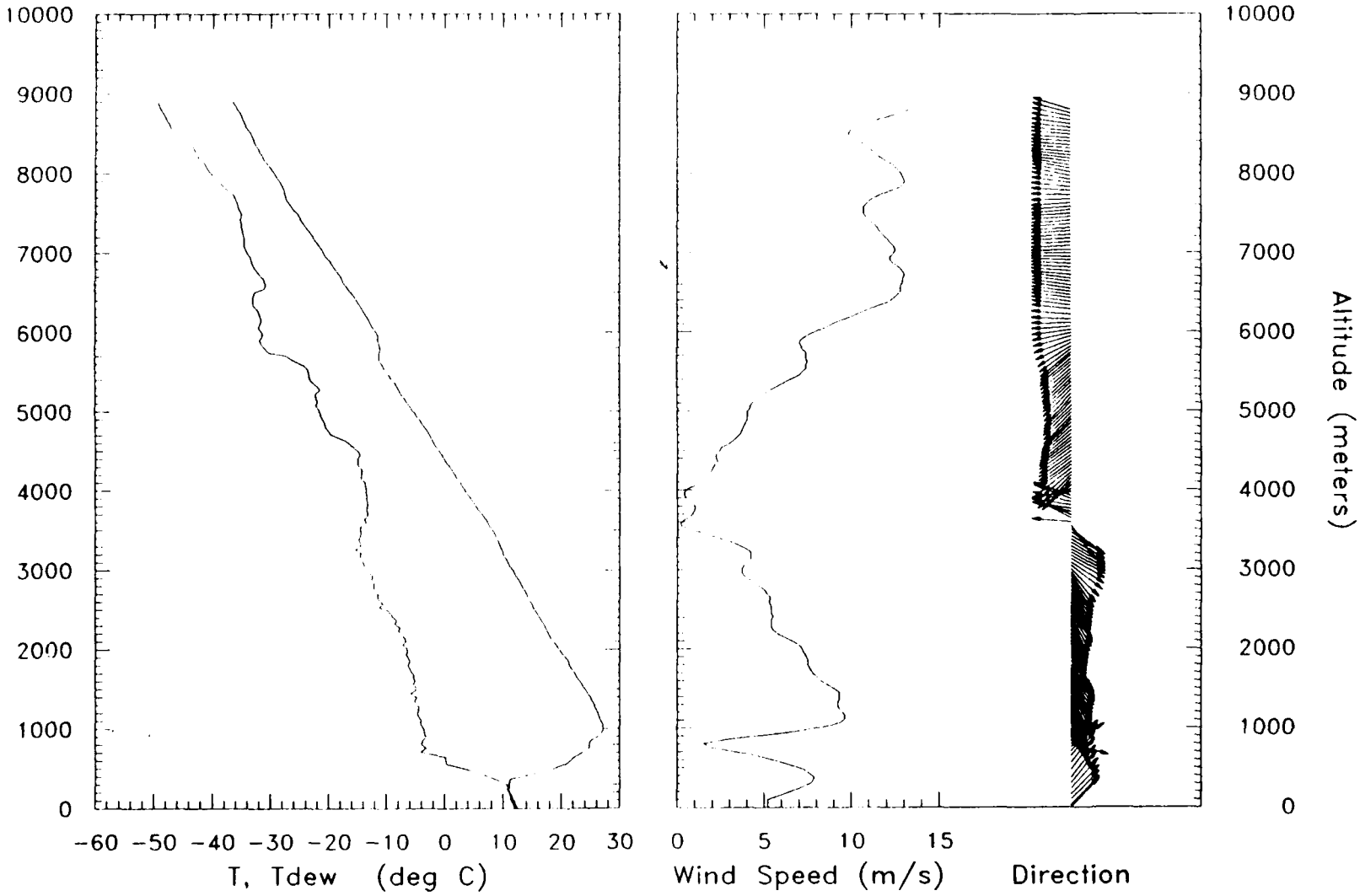
R/V Silver Prince: 0.2 km S, 11.4 km W of Moss Landing – 18 SEP 87 14:37 PST



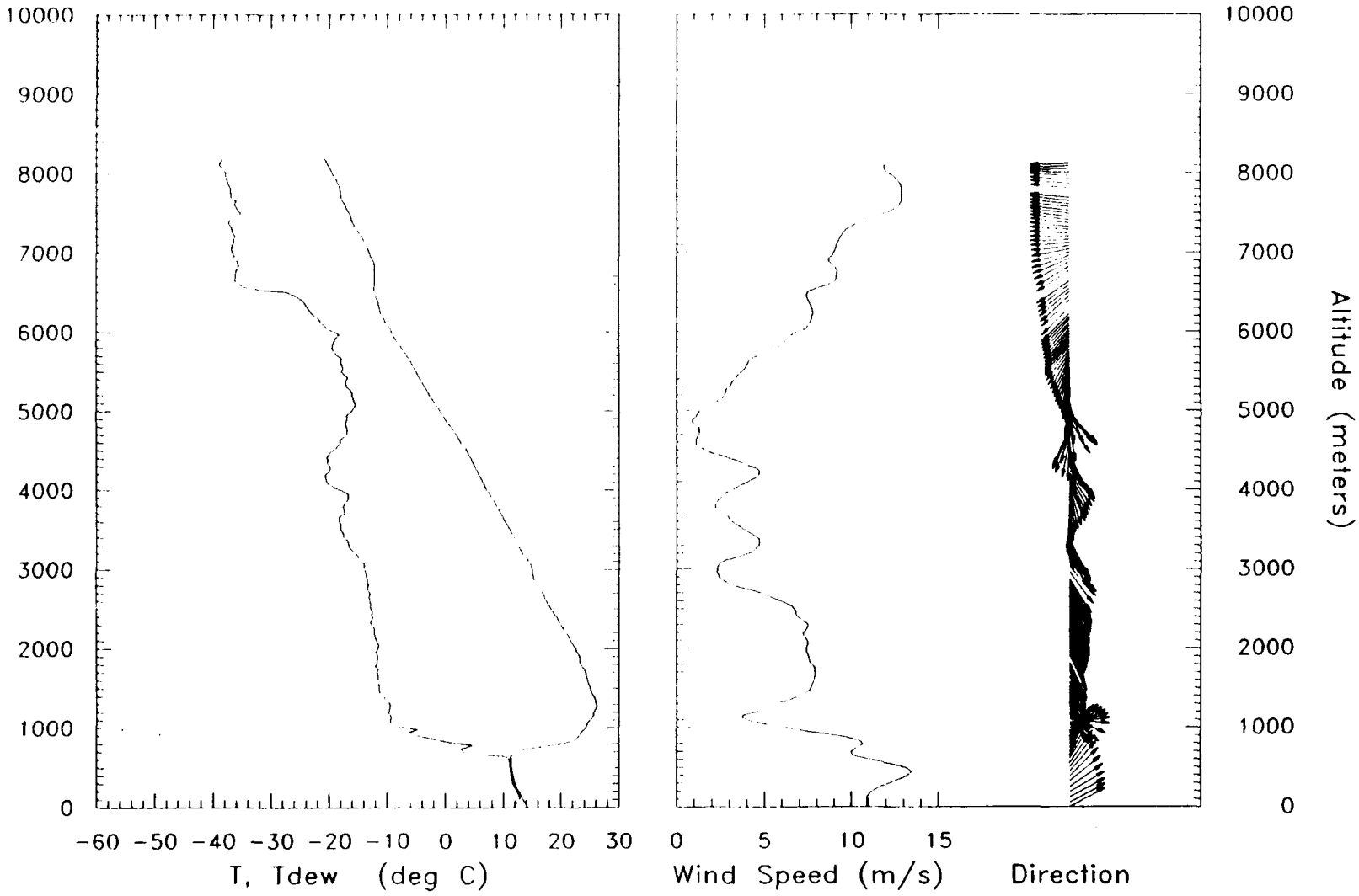
R/V Silver Prince: 0.1 km S, 26.3 km W of Moss Landing – 22 SEP 87 08:09 PST



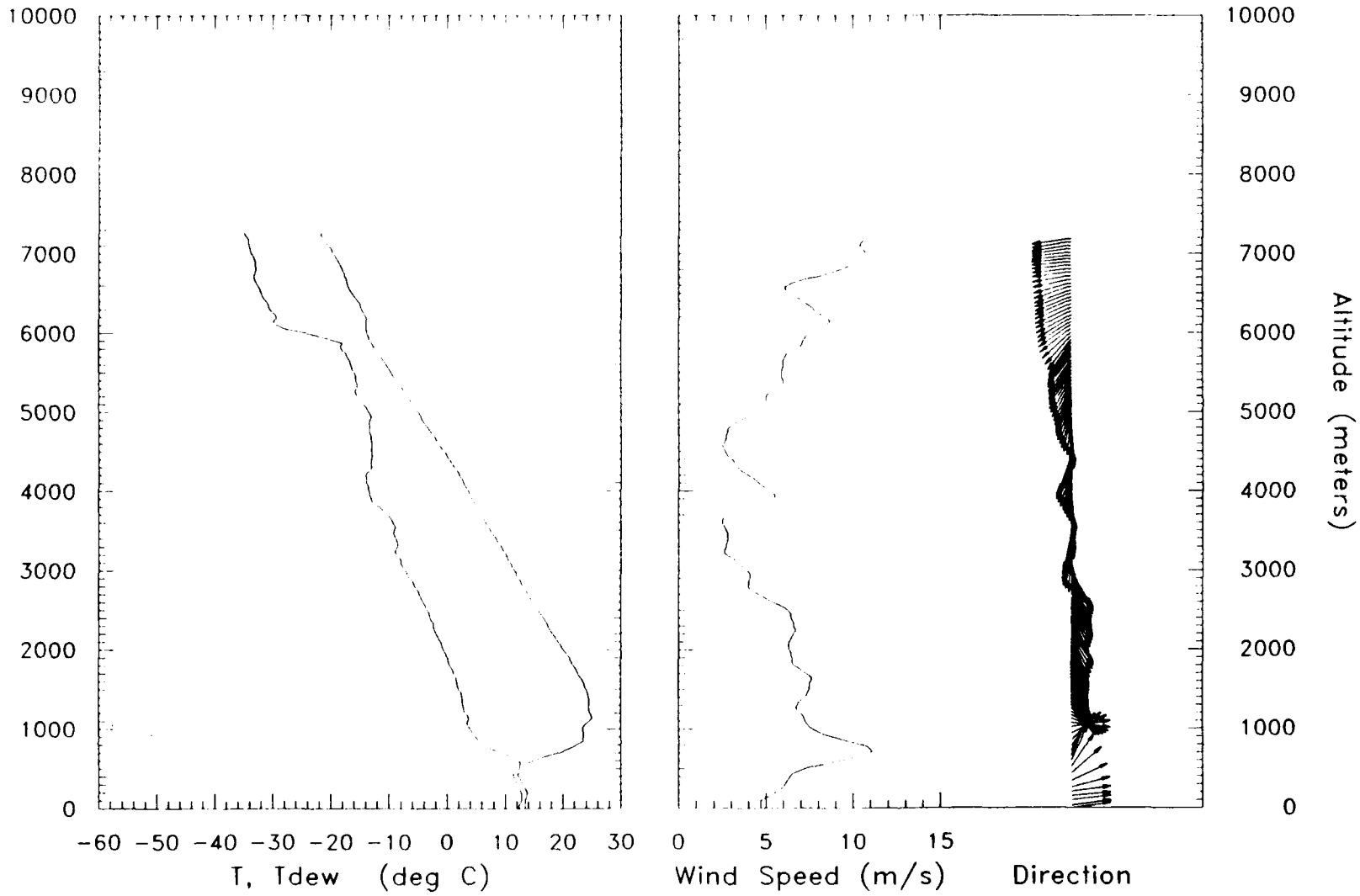
R/V Silver Prince: 0.2 km S, 11.4 km W of Moss Landing - 22 SEP 87 10:12 PST



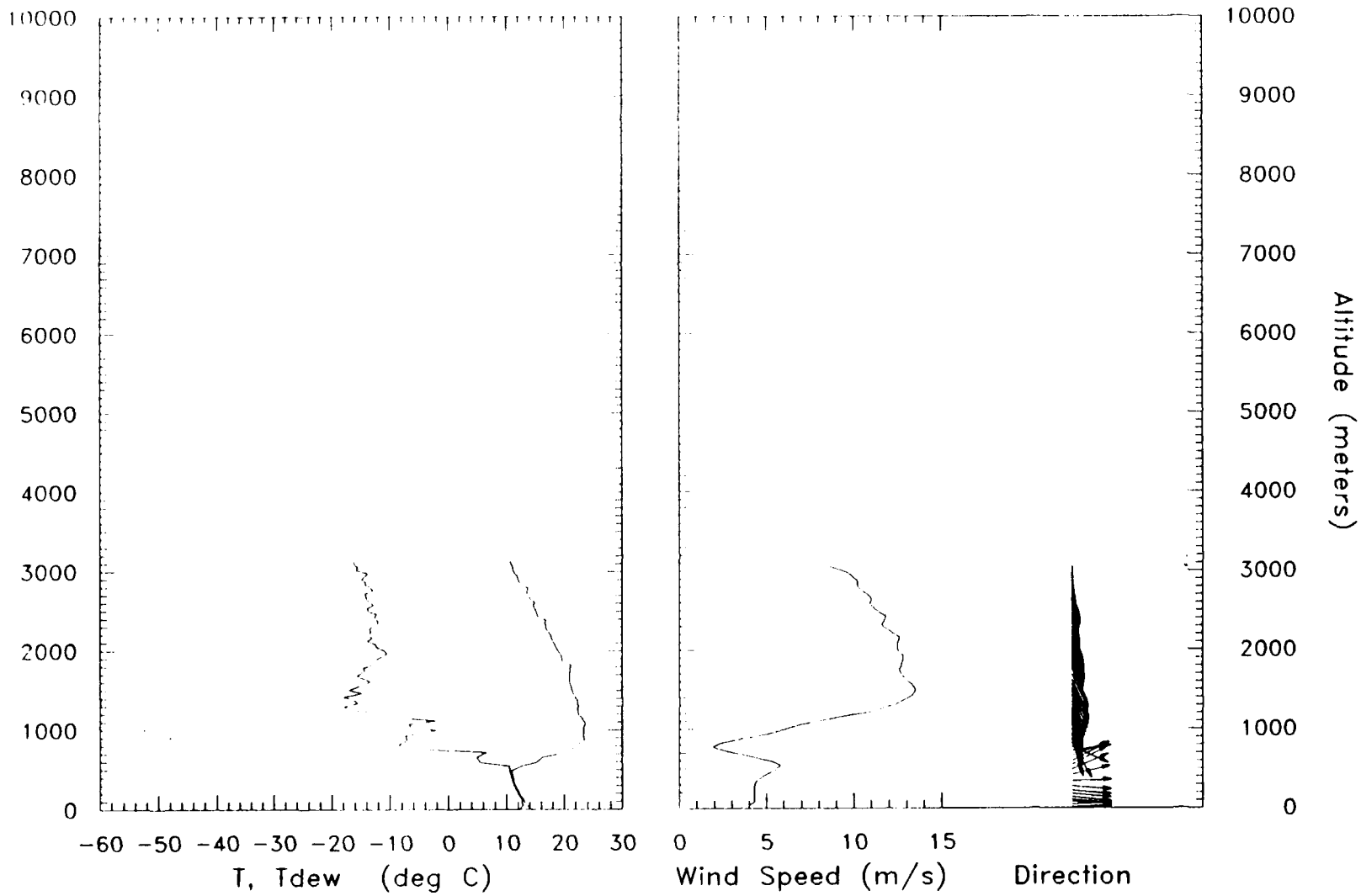
R/V Silver Prince: 0.0 km S, 11.4 km W of Moss Landing – 22 SEP 87 12:41 PST



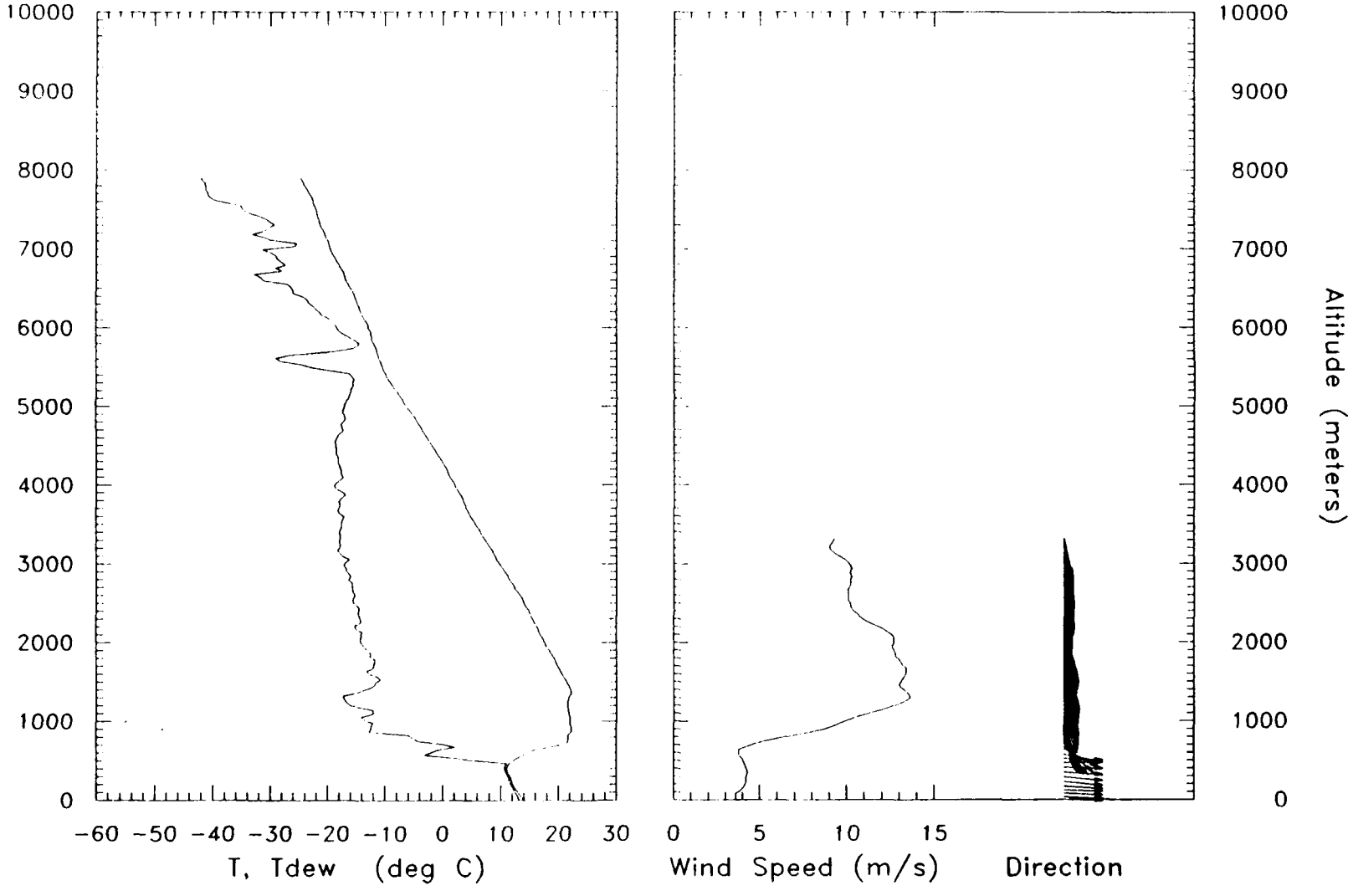
R/V Silver Prince: 0.2 km S, 11.2 km W of Moss Landing – 22 SEP 87 14:53 PST



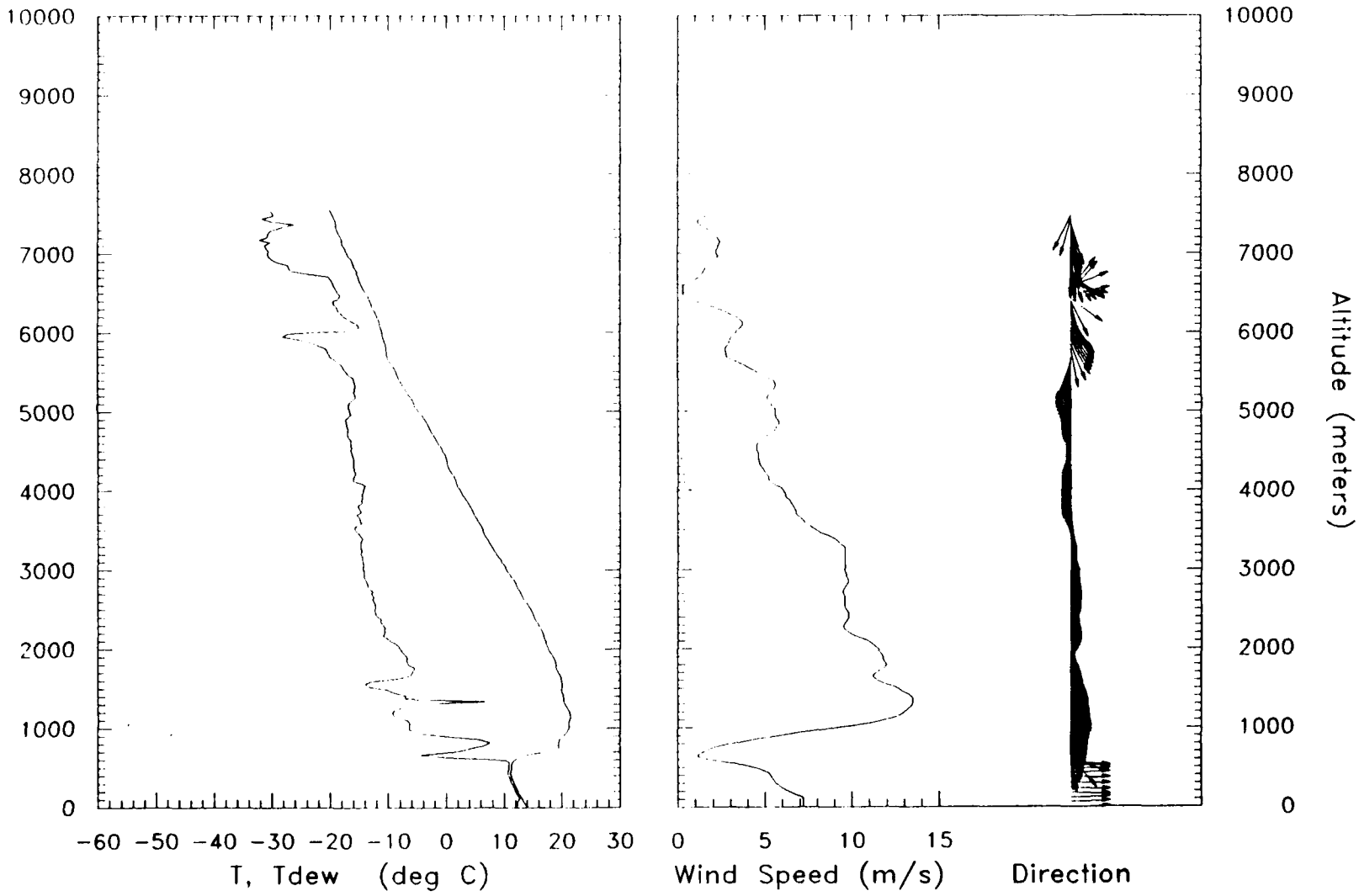
R/V Silver Prince: 0.2 km S, 11.2 km W of Moss Landing - 23 SEP 87 13:23 PST



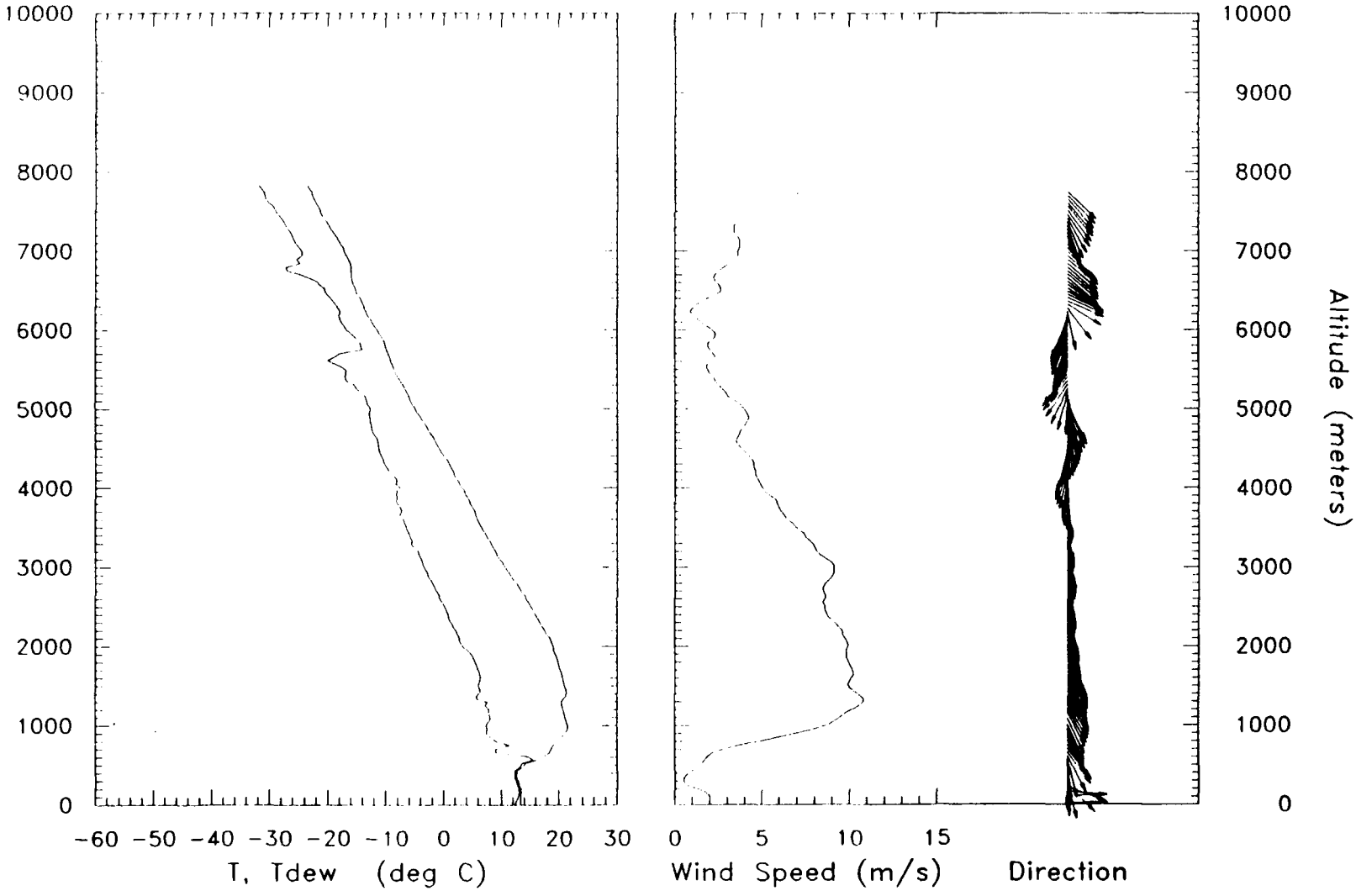
R/V Silver Prince: 0.0 km S, 11.2 km W of Moss Landing - 23 SEP 87 16:03 PST



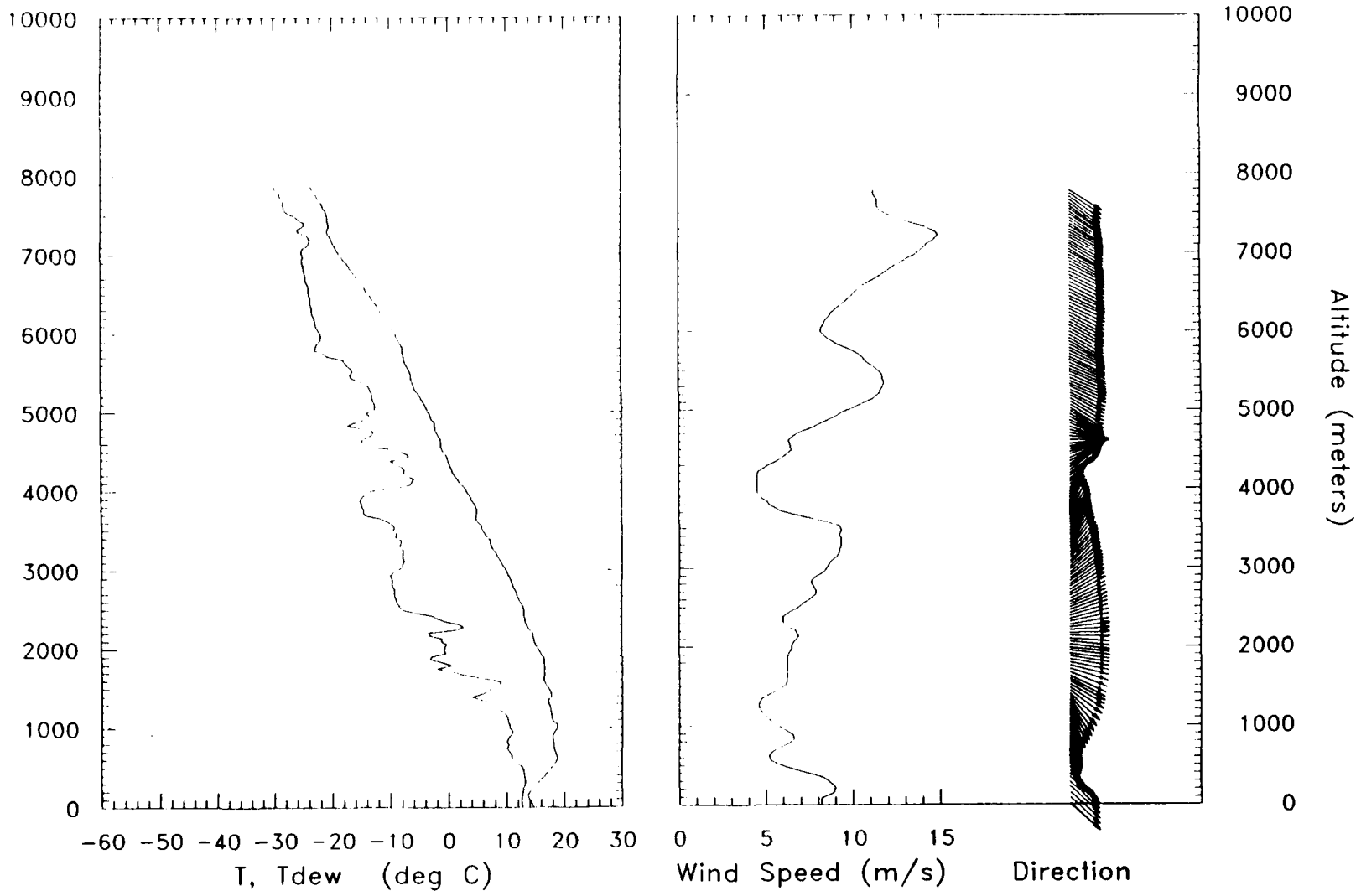
R/V Silver Prince: 0.2 km S, 11.4 km W of Moss Landing – 23 SEP 87 18:29 PST



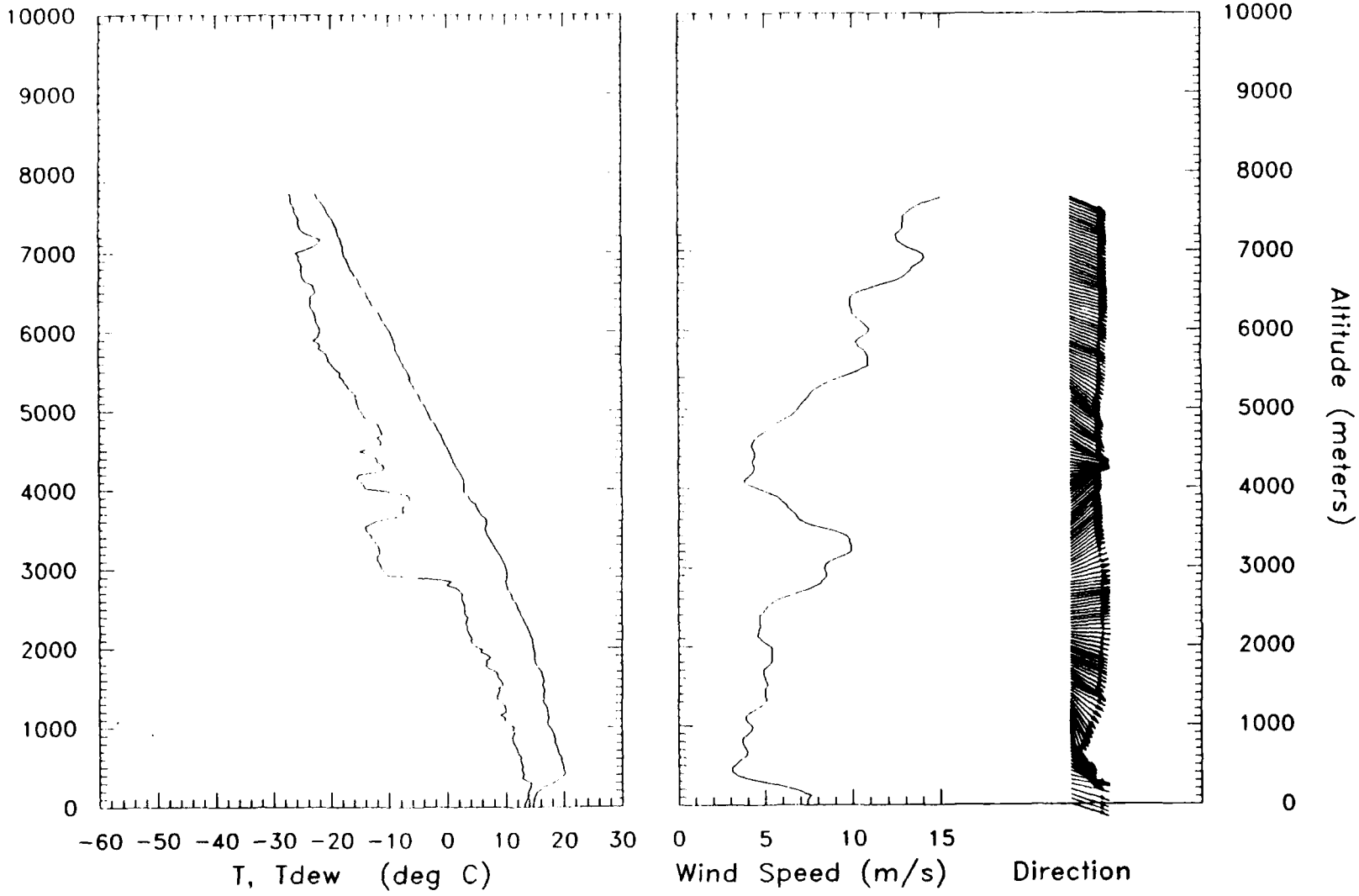
R/V Silver Prince: 0.2 km S, 11.7 km W of Moss Landing – 23 SEP 87 20:33 PST



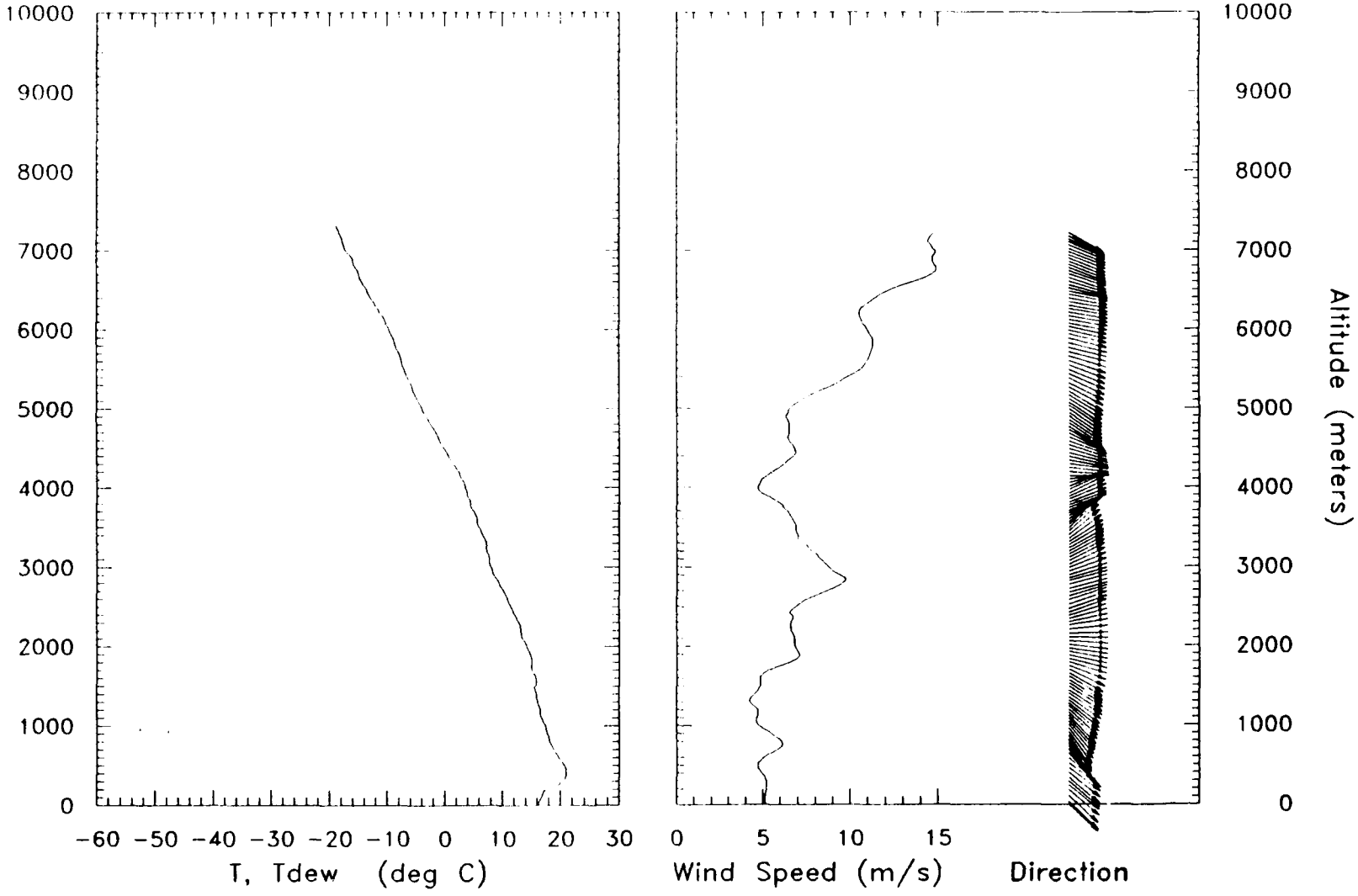
R/V Silver Prince: 1.5 km S, 25.0 km W of Moss Landing – 24 SEP 87 12:20 PST



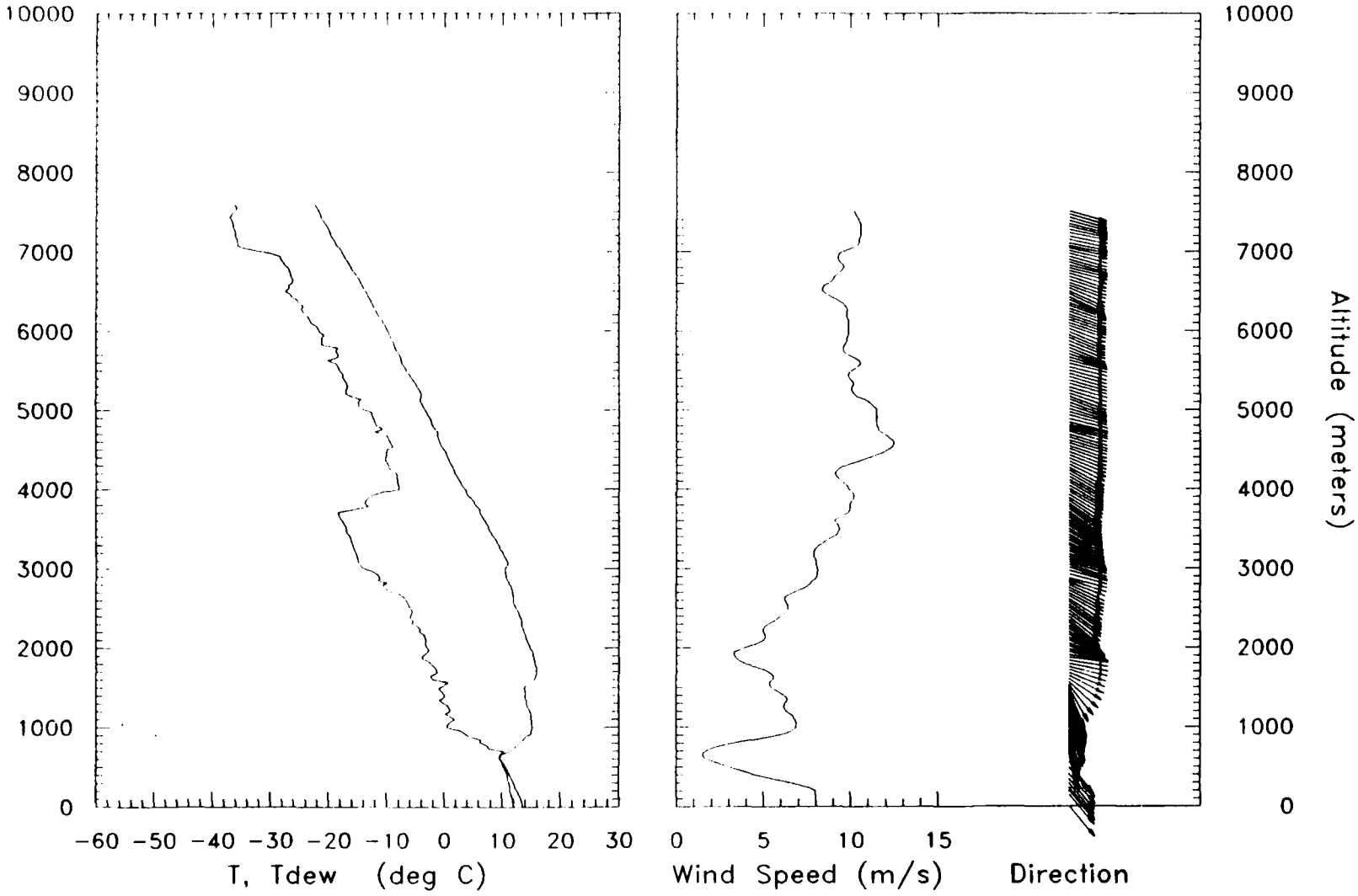
R/V Silver Prince: 0.2 km N, 9.5 km W of Moss Landing – 24 SEP 87 14:20 PST



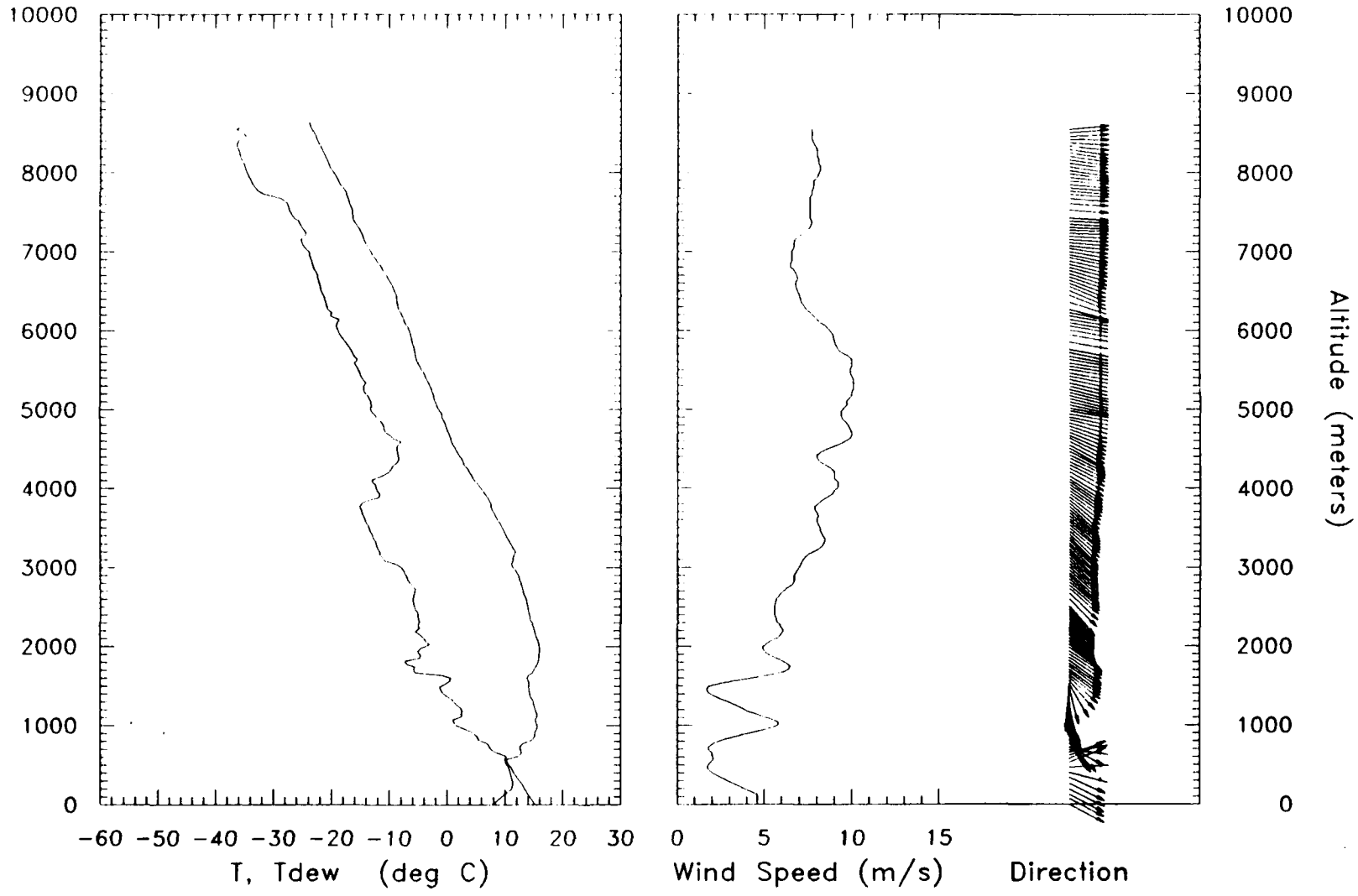
R/V Silver Prince: 0.3 km S, 10.4 km W of Moss Landing – 24 SEP 87 16:13 PST



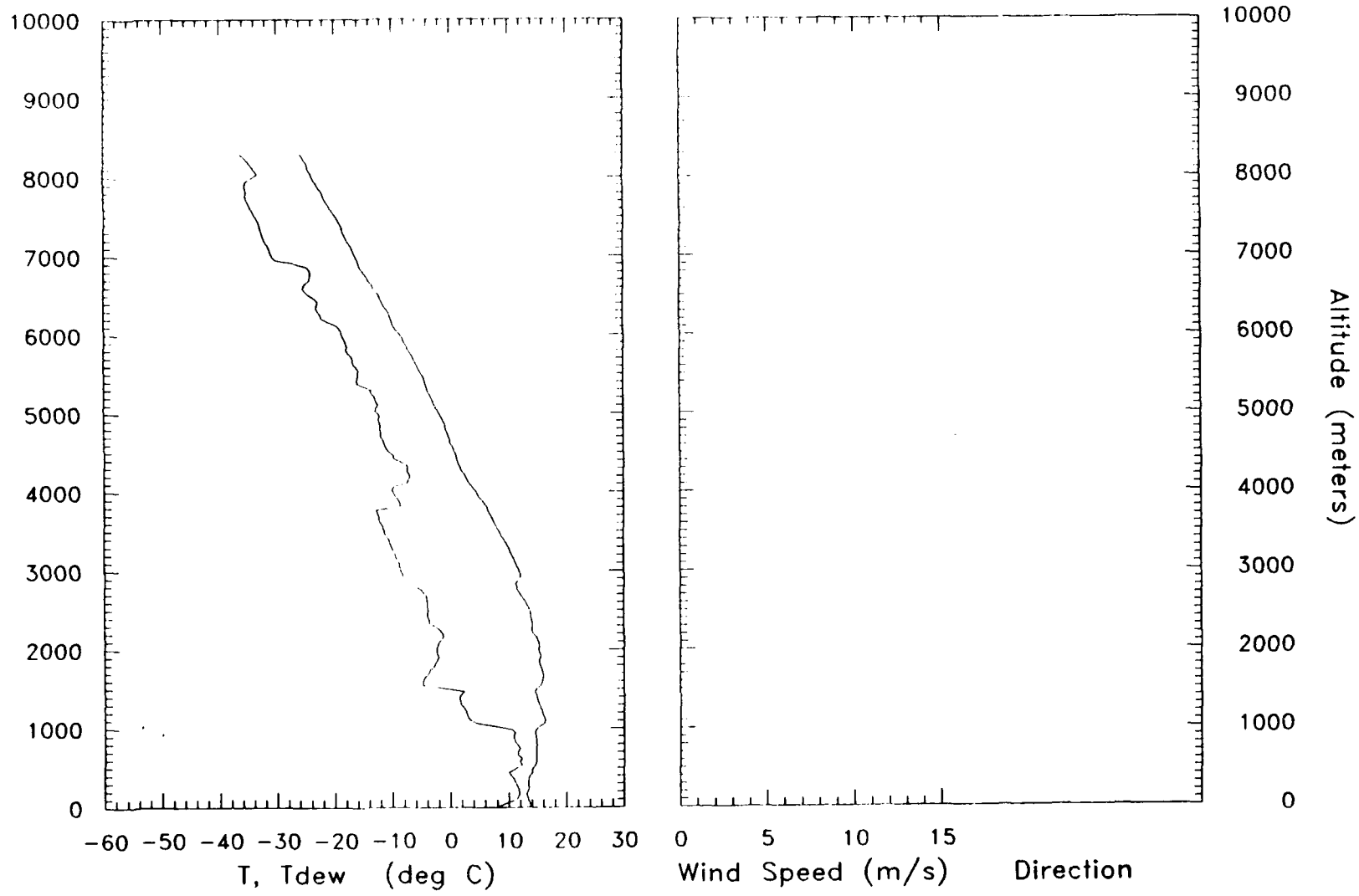
R/V Silver Prince: 0.7 km S, 25.3 km W of Moss Landing – 25 SEP 87 08:13 PST



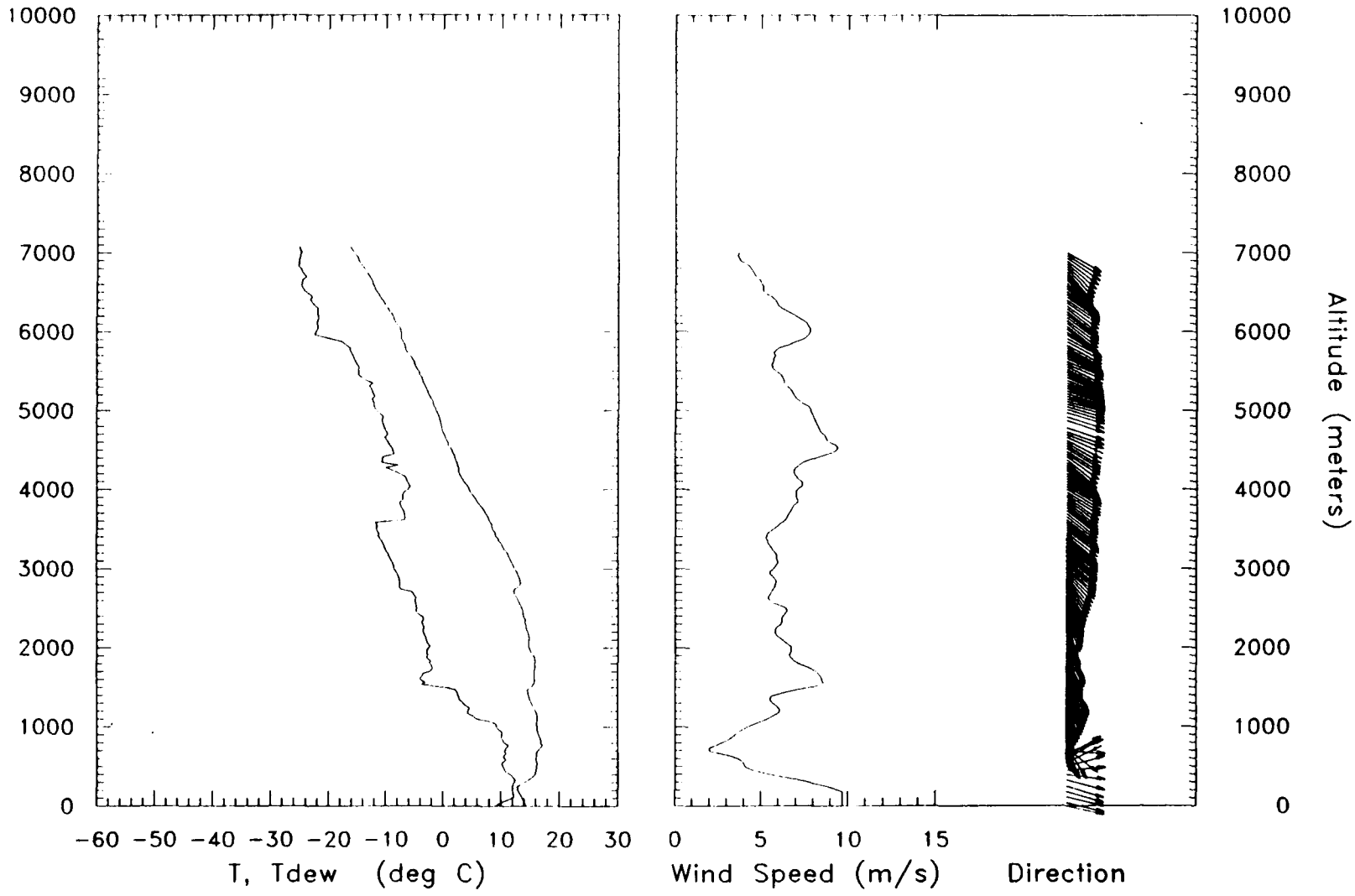
R/V Silver Prince: 0.1 km N, 11.4 km W of Moss Landing - 25 SEP 87 10:25 PST



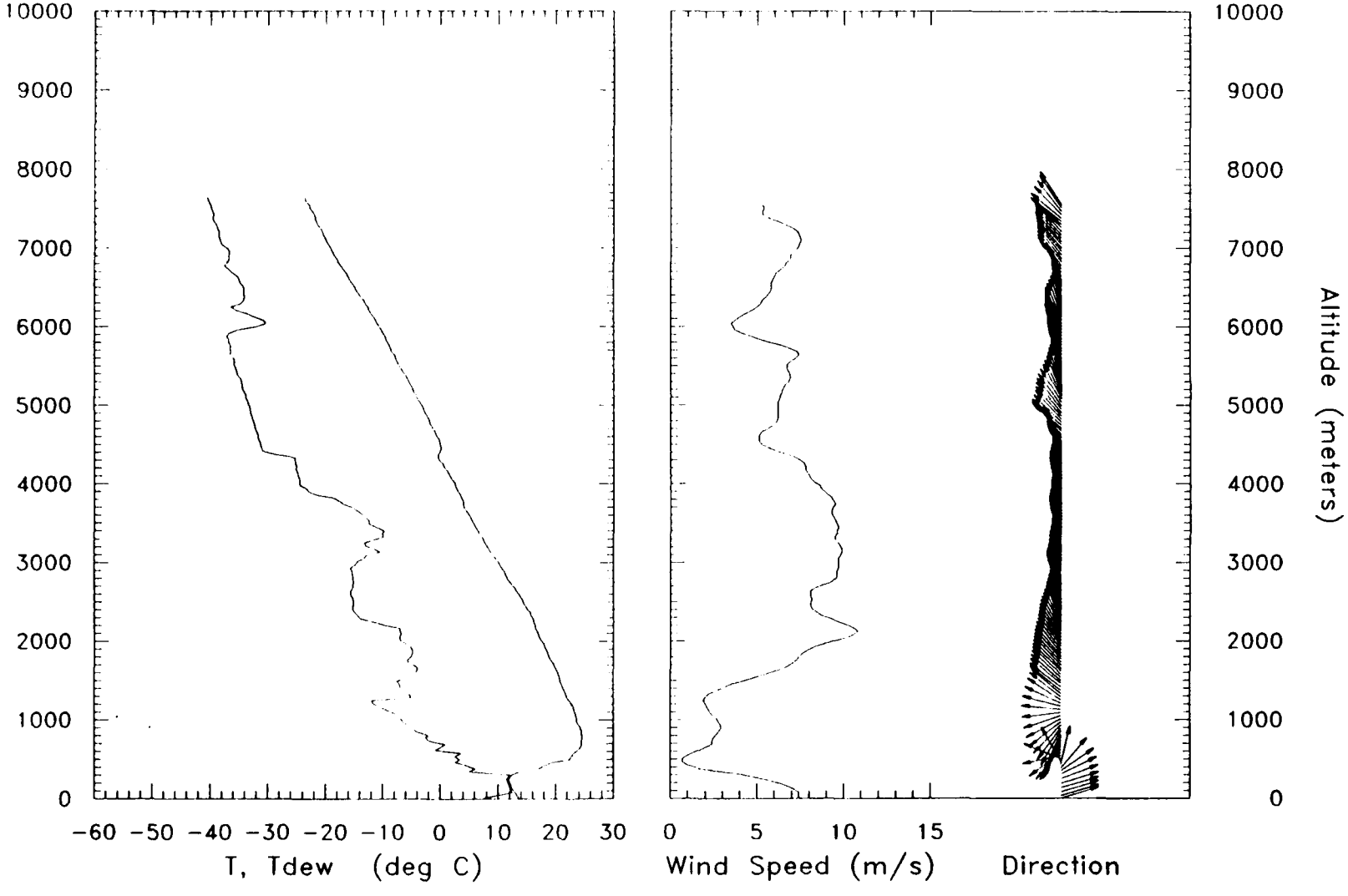
R/V Silver Prince: 0.2 km S, 11.4 km W of Moss Landing - 25 SEP 87 12:58 PST



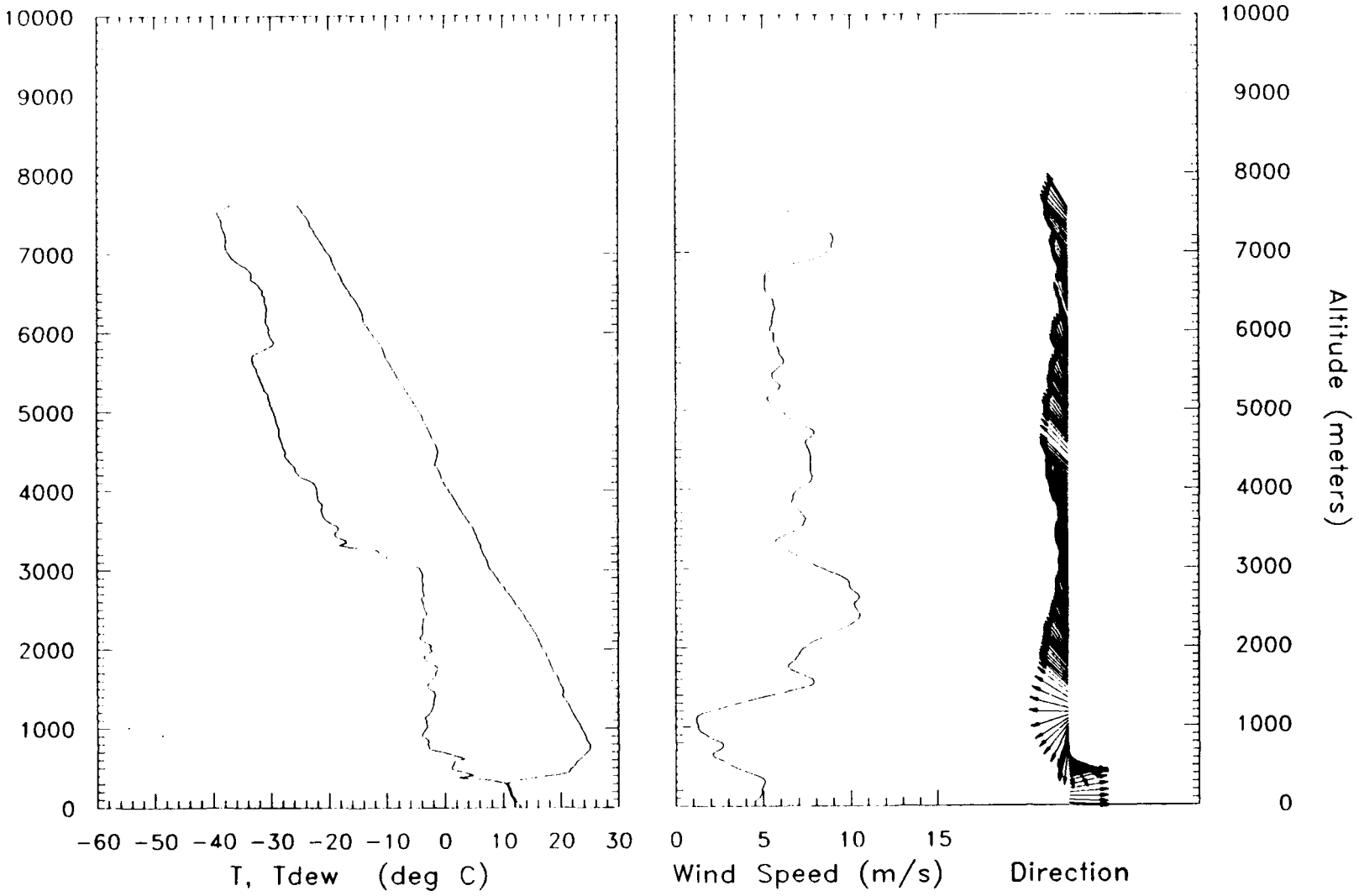
R/V Silver Prince: 0.3 km S, 11.2 km W of Moss Landing – 25 SEP 87 15:23 PST



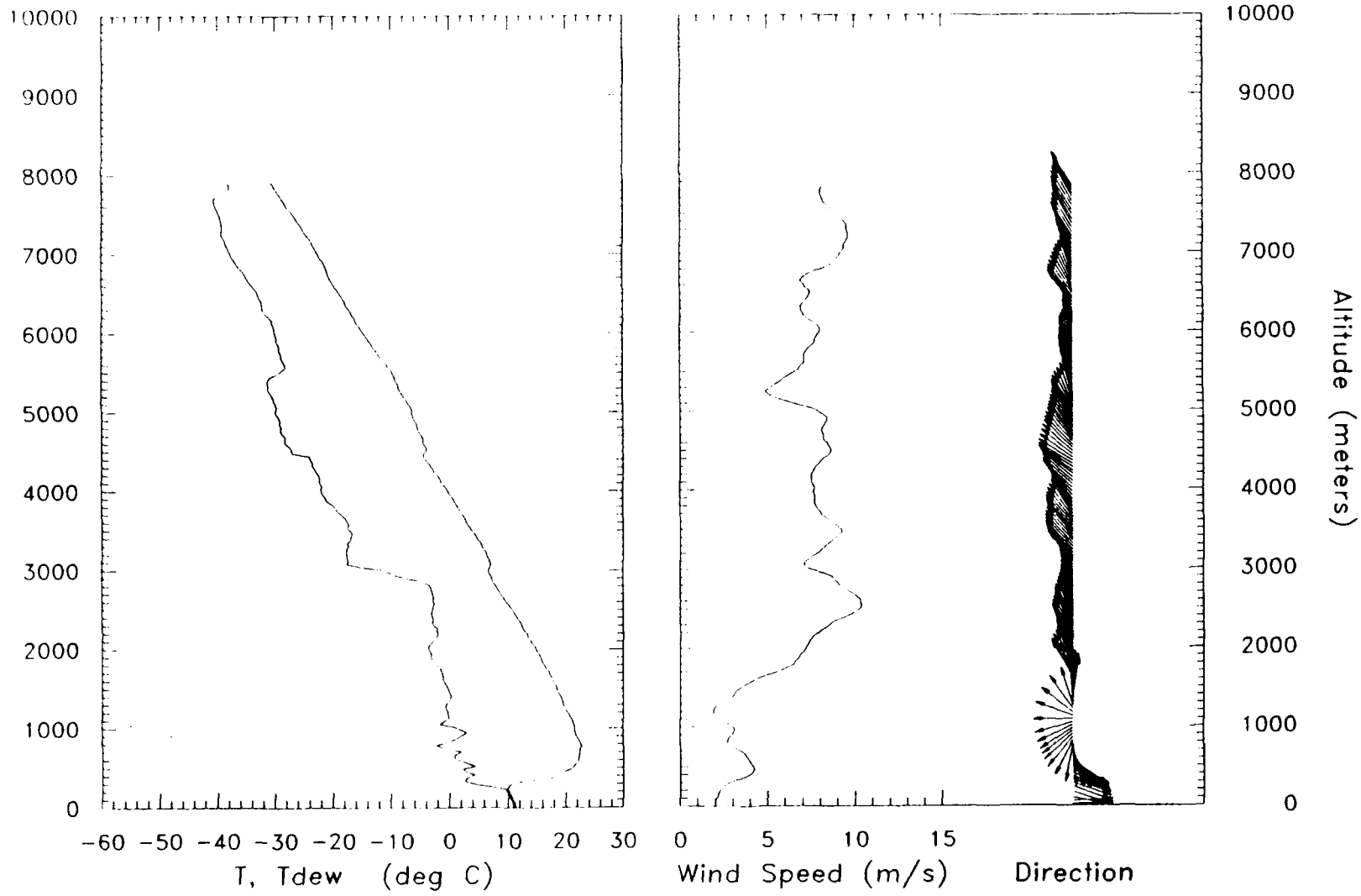
R/V Silver Prince: 0.3 km S, 11.2 km W of Moss Landing - 28 SEP 87 12:53 PST



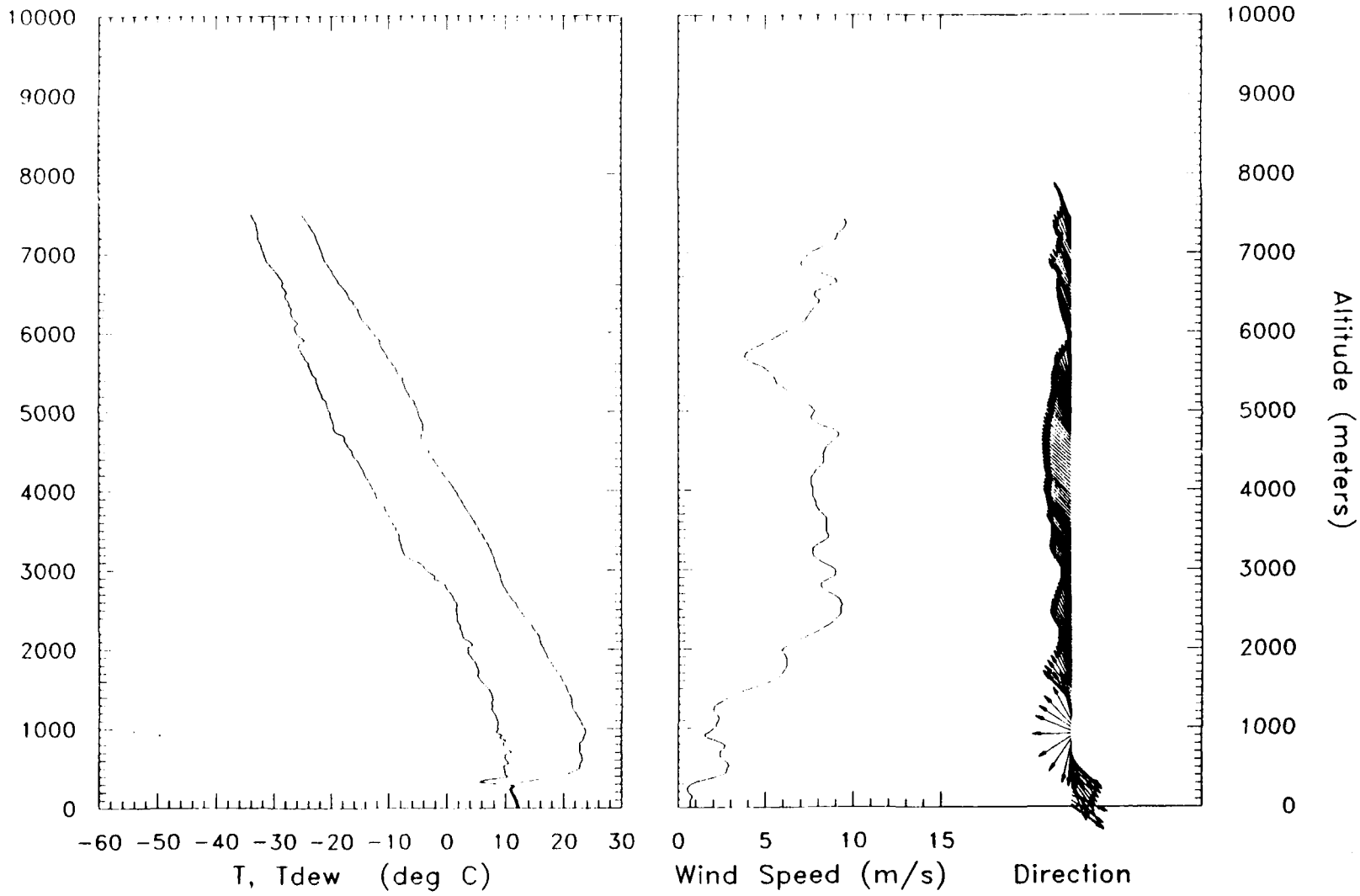
R/V Silver Prince: 0.1 km S, 10.9 km W of Moss Landing – 28 SEP 87 15:24 PST



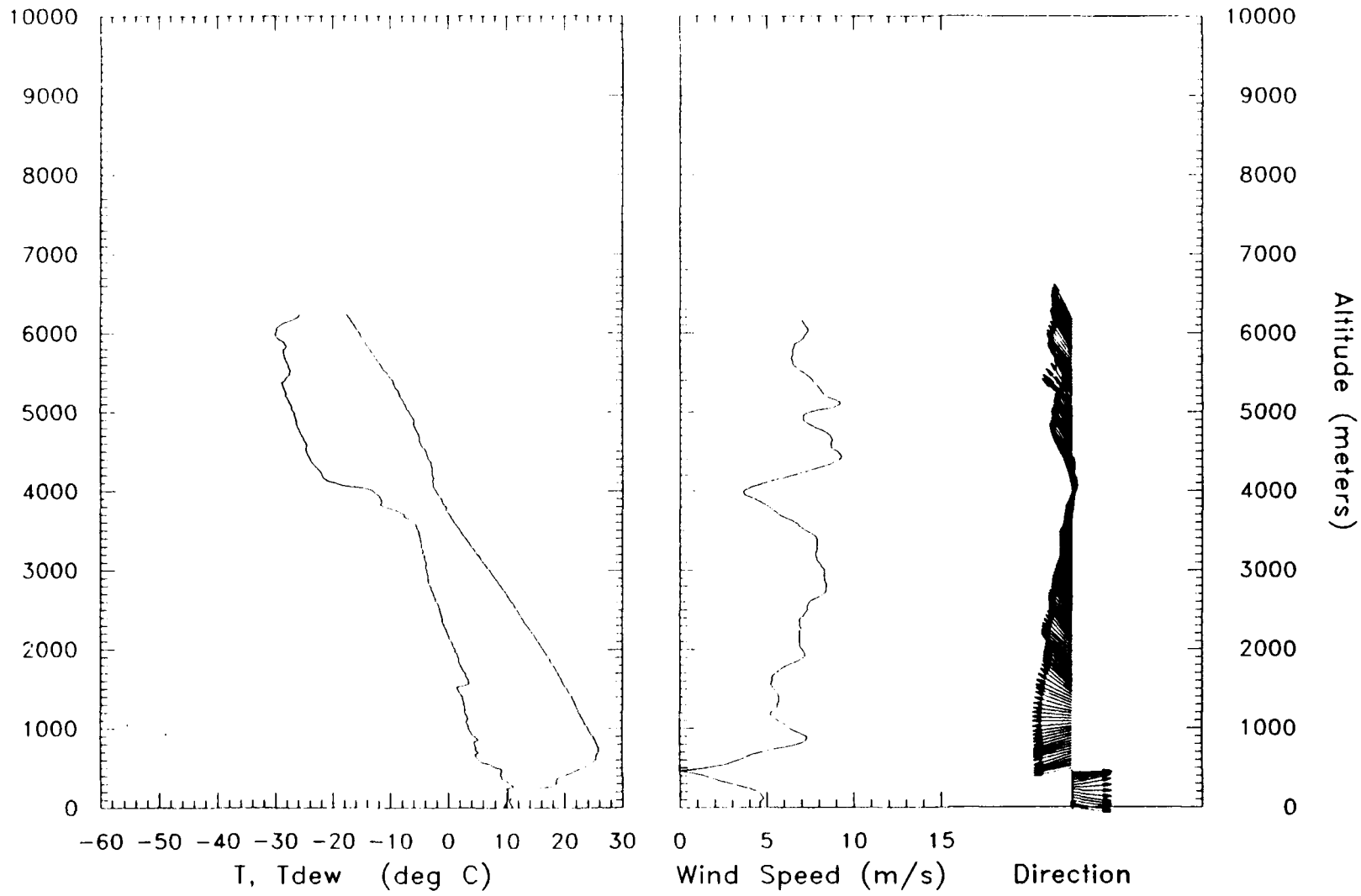
R/V Silver Prince: 0.3 km N, 11.4 km W of Moss Landing - 28 SEP 87 18:11 PST



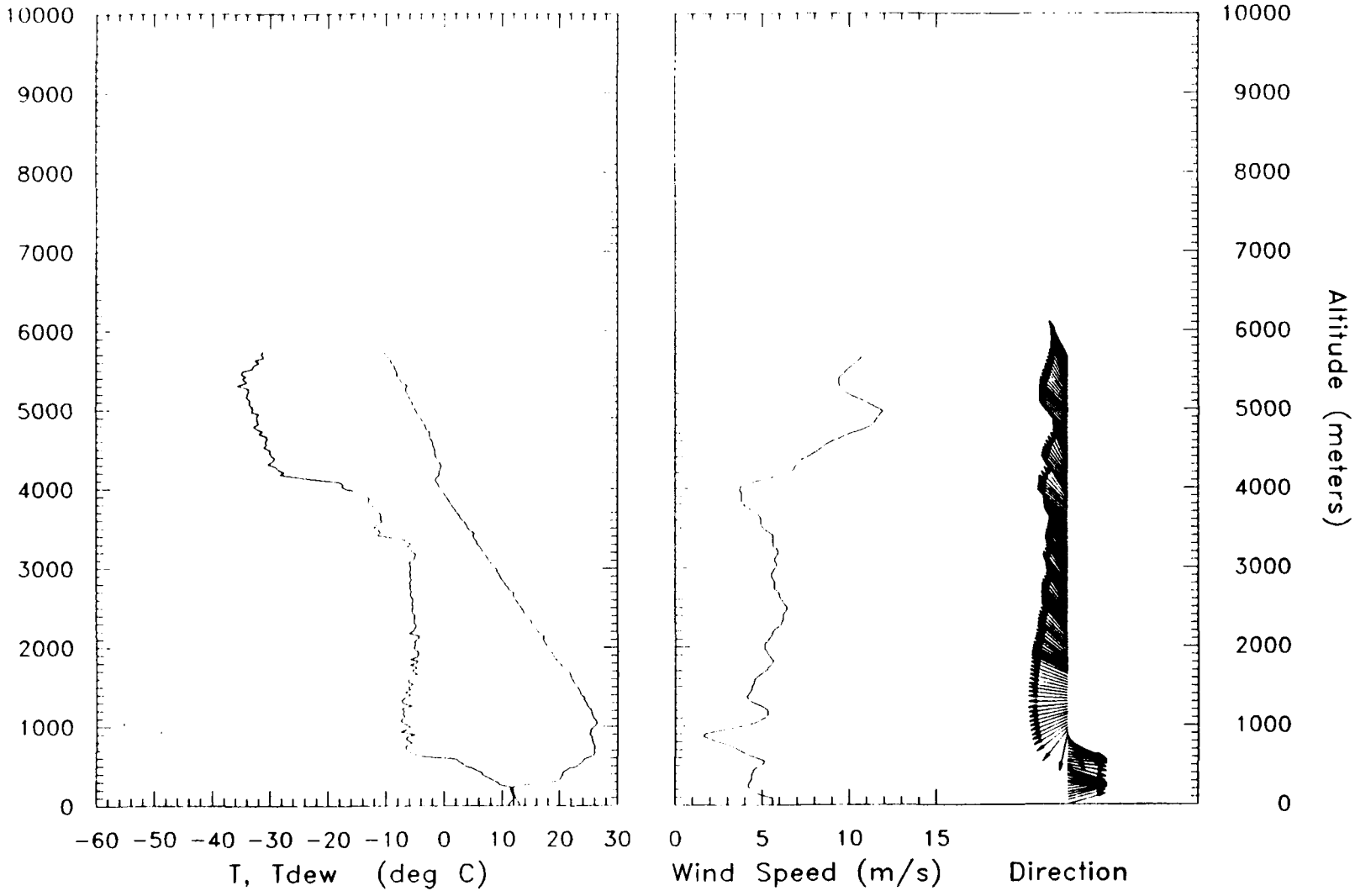
R/V Silver Prince: 0.2 km S, 10.9 km W of Moss Landing – 28 SEP 87 20:04 PST



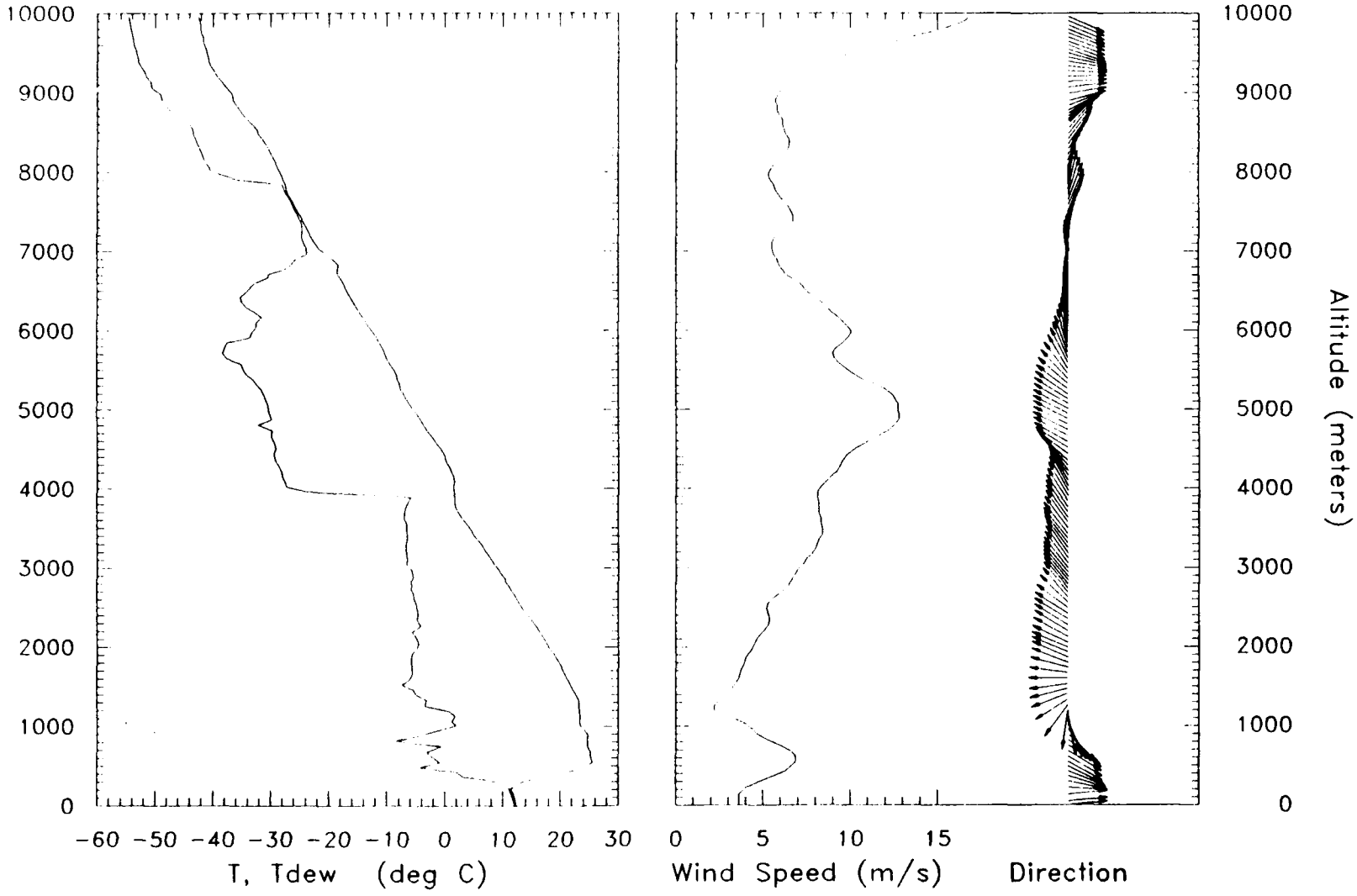
R/V Silver Prince: 0.2 km S, 11.9 km W of Moss Landing – 29 SEP 87 12:59 PST



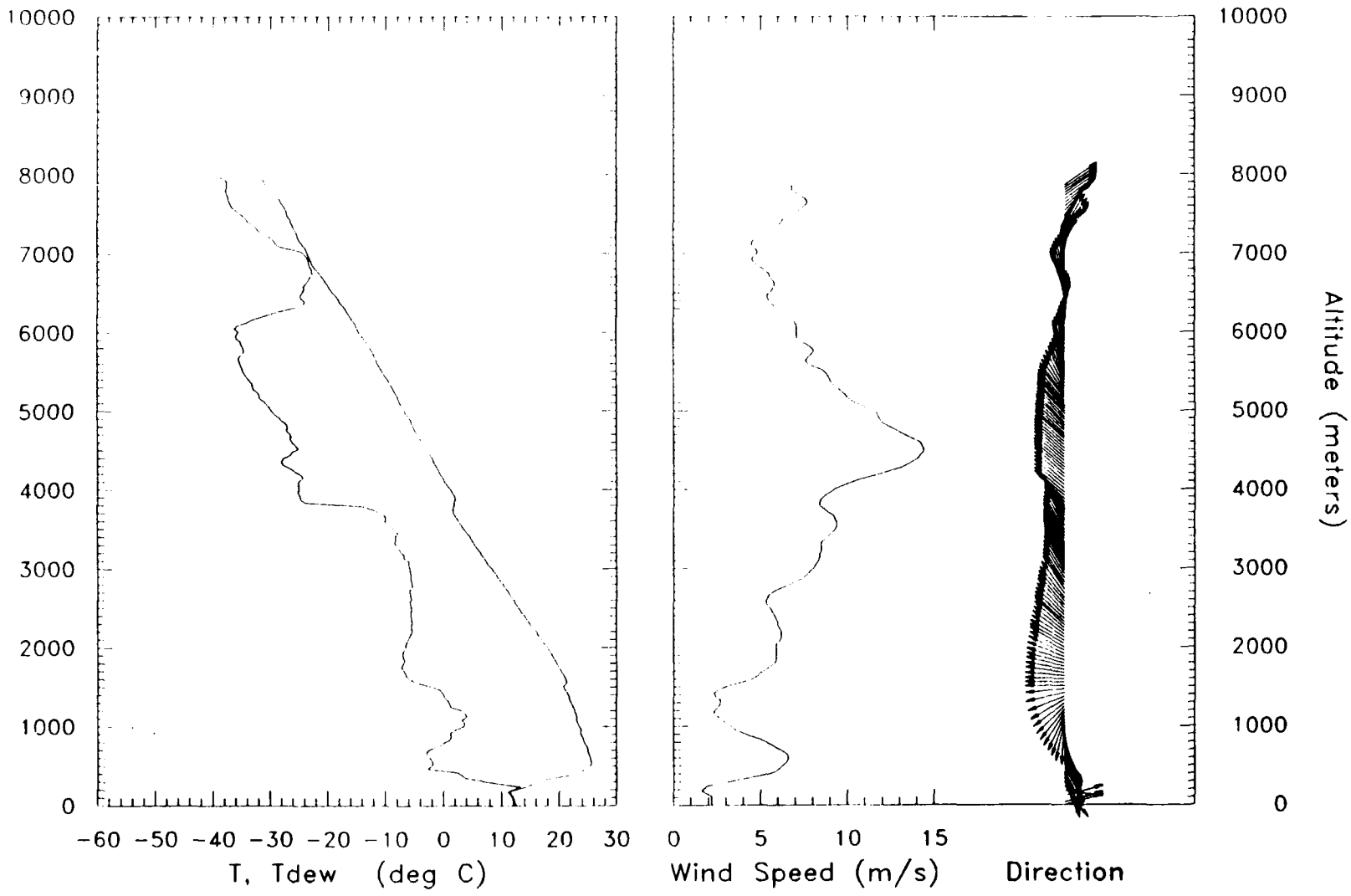
R/V Silver Prince: 0.2 km S, 11.2 km W of Moss Landing – 29 SEP 87 15:20 PST



R/V Silver Prince: 0.1 km S, 11.4 km W of Moss Landing - 29 SEP 87 17:48 PST



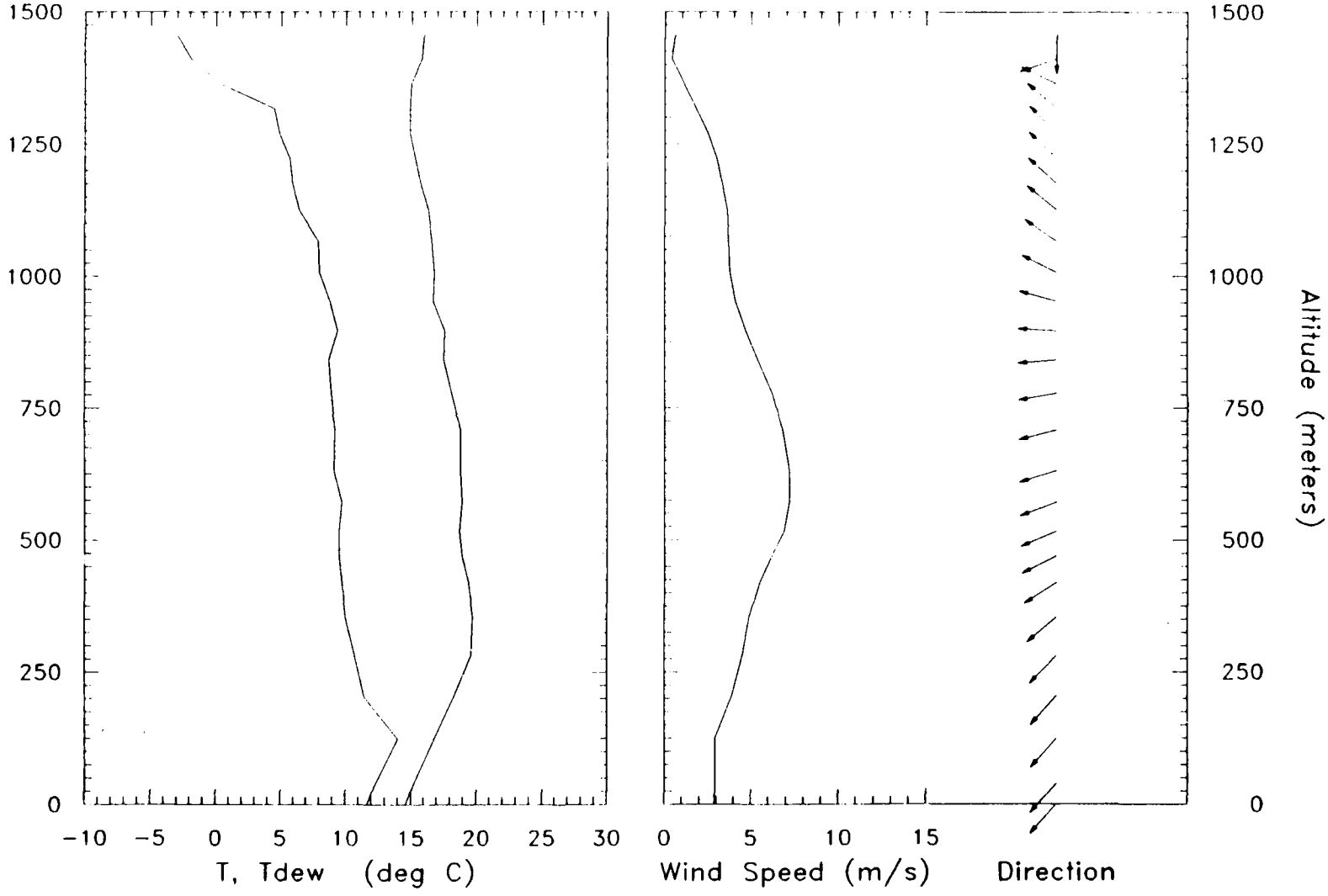
R/V Silver Prince: 0.0 km N, 11.4 km W of Moss Landing - 29 SEP 87 19:54 PST



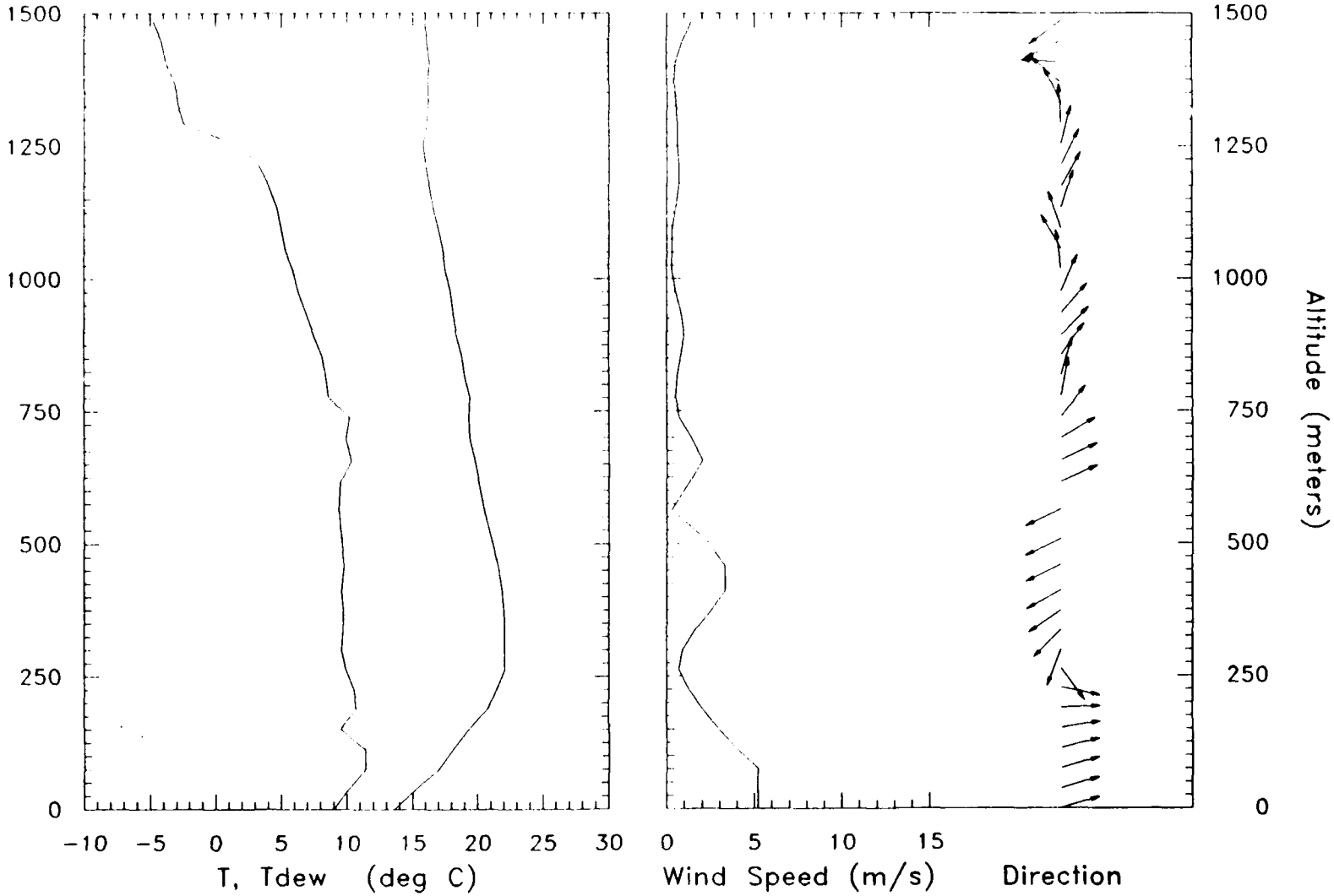
18. RAWINSONDE PROFILES (LOWEST 1500 M), SILVER PRINCE

This section presents the 28 thermodynamic and dynamic profiles collected by rawinsondes launched from the R/V Silver Prince. Only the lowest 1500 m of the profiles are presented in order to show structural detail associated with the boundary layer. The left panel for each page contains the a temperature and dewpoint profiles, and the right panel contains wind speed and direction.

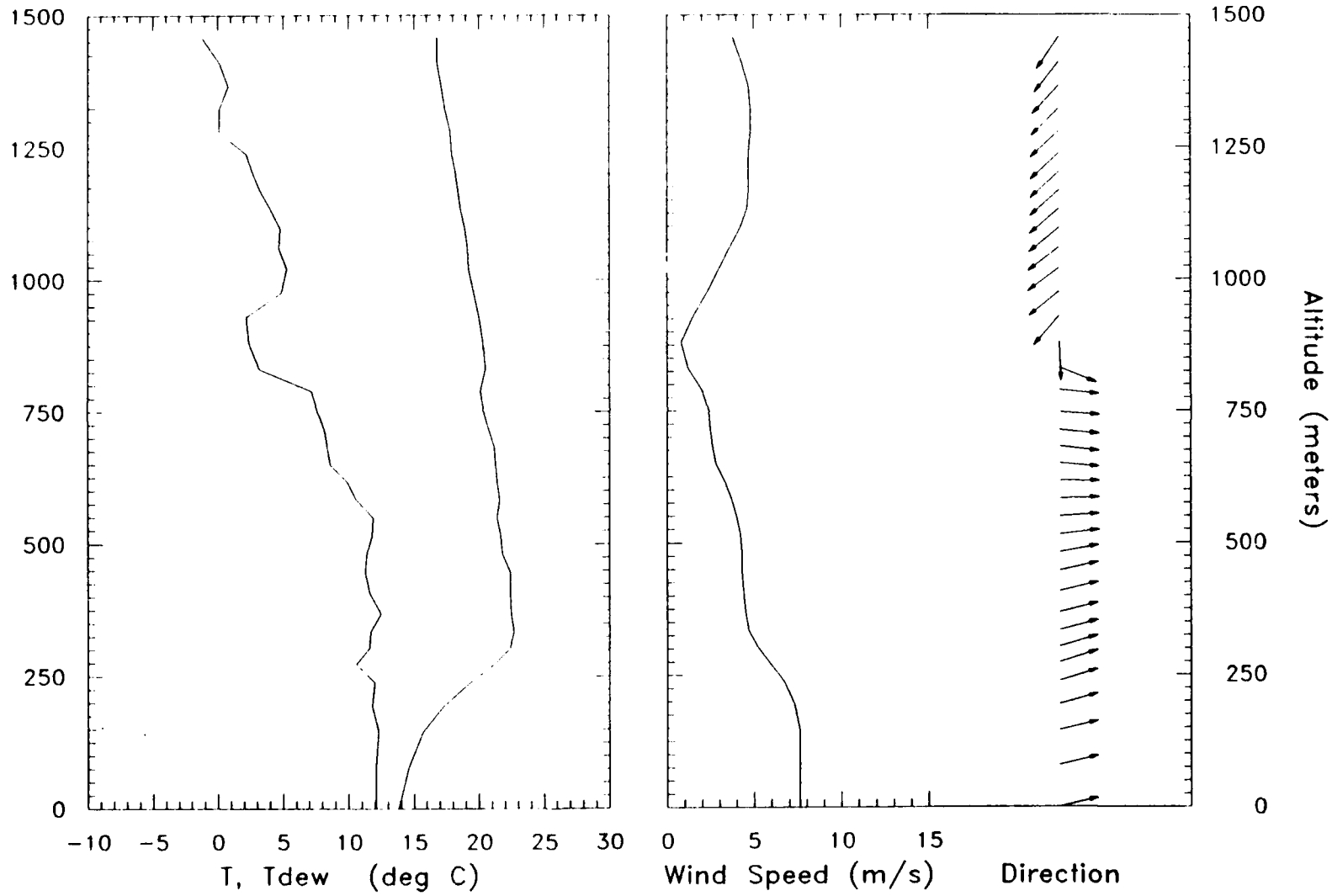
R/V Silver Prince: 0.2 km S, 11.2 km W of Moss Landing – 16 SEP 87 09:35 PST



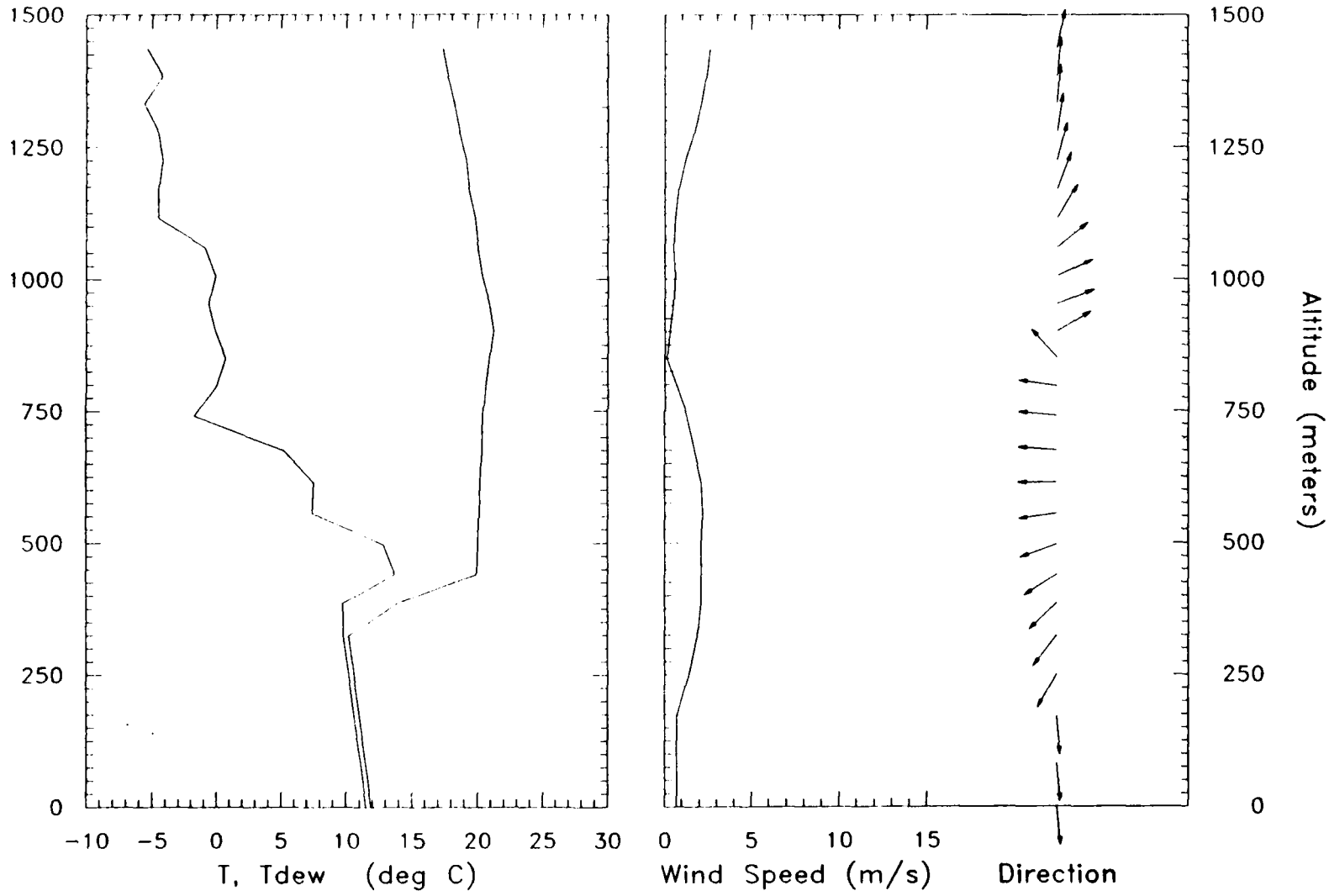
R/V Silver Prince: 0.2 km S, 11.2 km W of Moss Landing - 16 SEP 87 11:57 PST



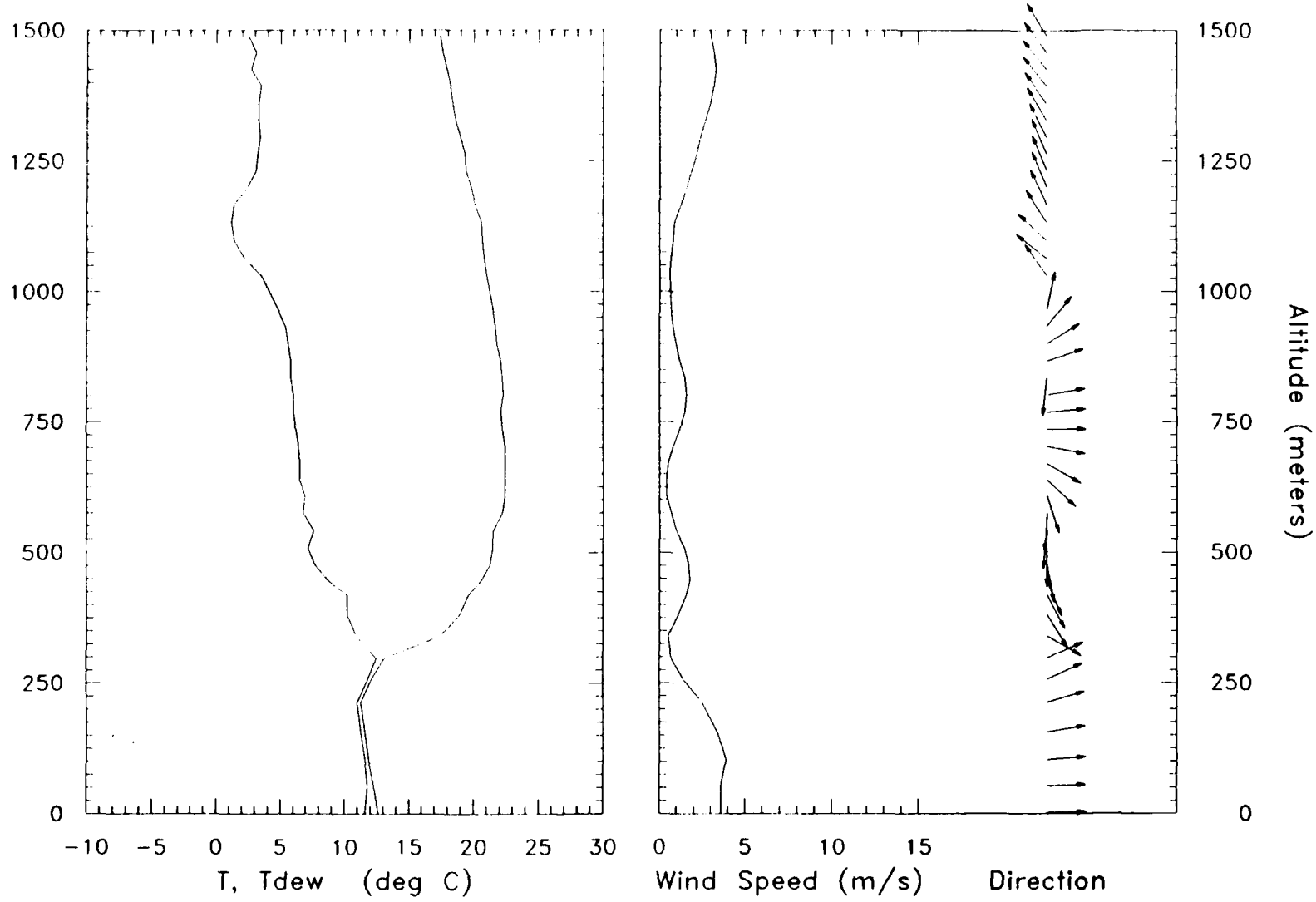
R/V Silver Prince: 0.2 km S, 11.4 km W of Moss Landing – 16 SEP 87 14:09 PST



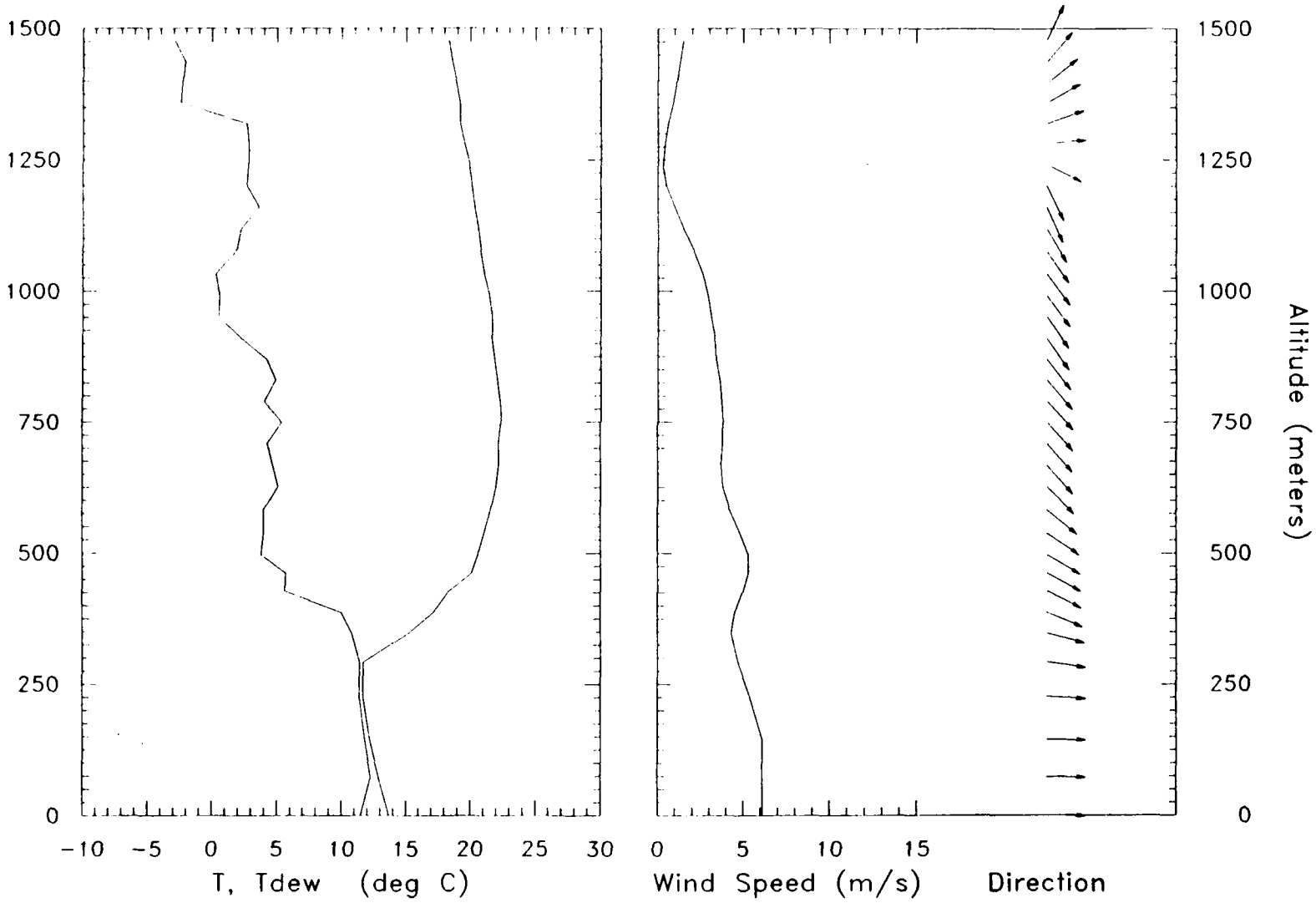
R/V Silver Prince: 0.1 km S, 26.0 km W of Moss Landing - 18 SEP 87 09:10 PST



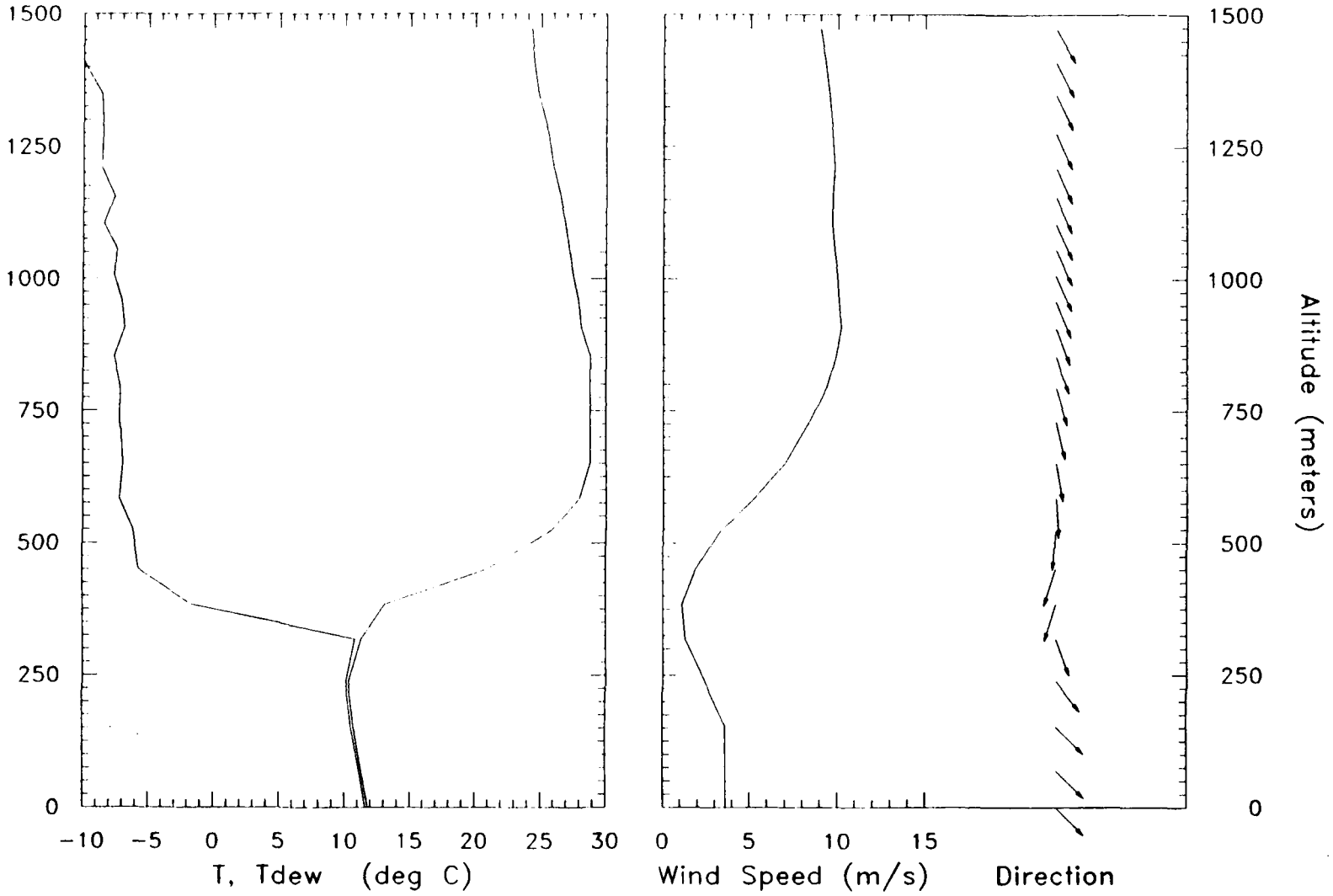
R/V Silver Prince: 0.2 km S, 11.4 km W of Moss Landing – 18 SEP 87 11:44 PST



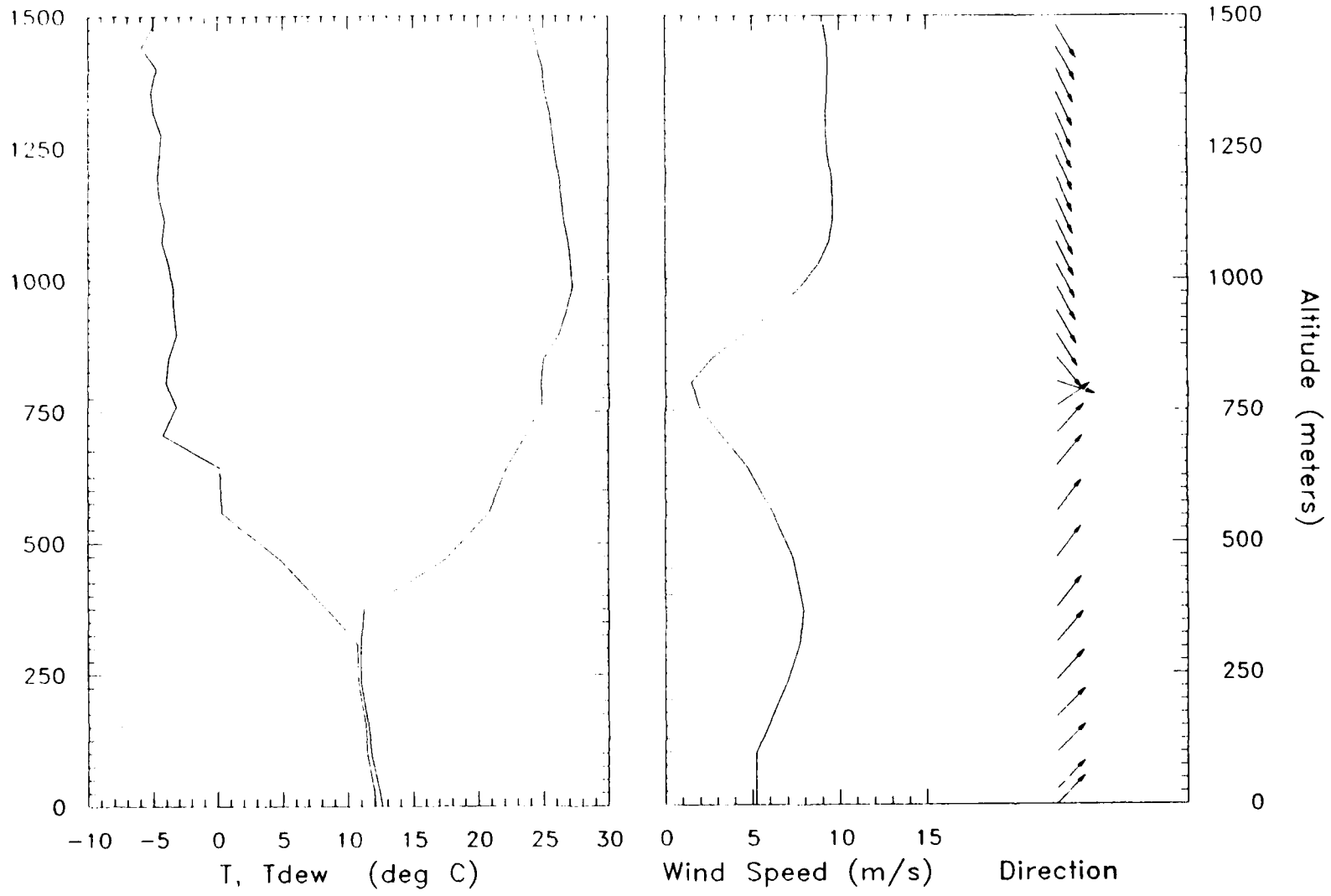
R/V Silver Prince: 0.2 km S, 11.4 km W of Moss Landing – 18 SEP 87 14:37 PST



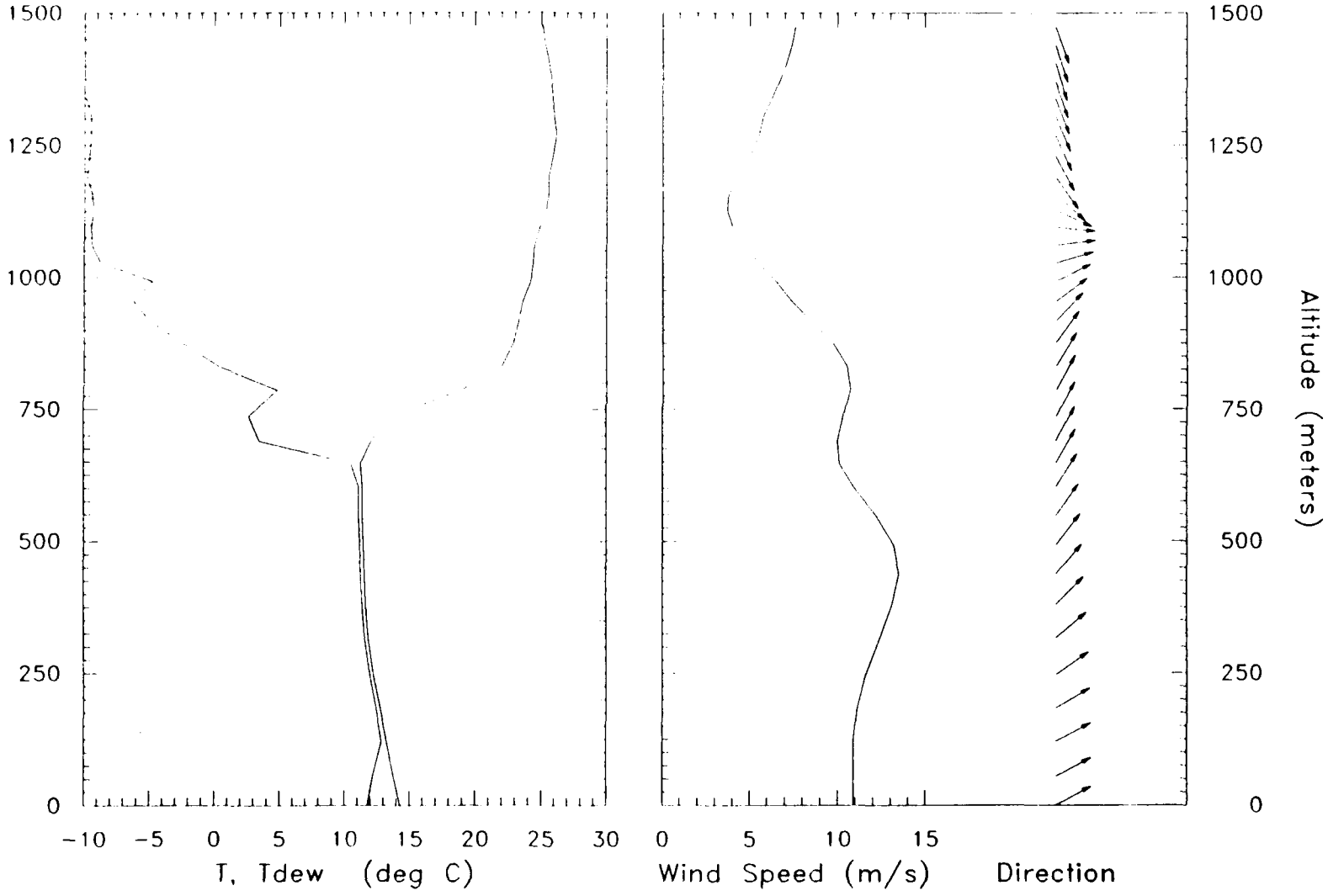
R/V Silver Prince: 0.1 km S, 26.3 km W of Moss Landing – 22 SEP 87 08:09 PST



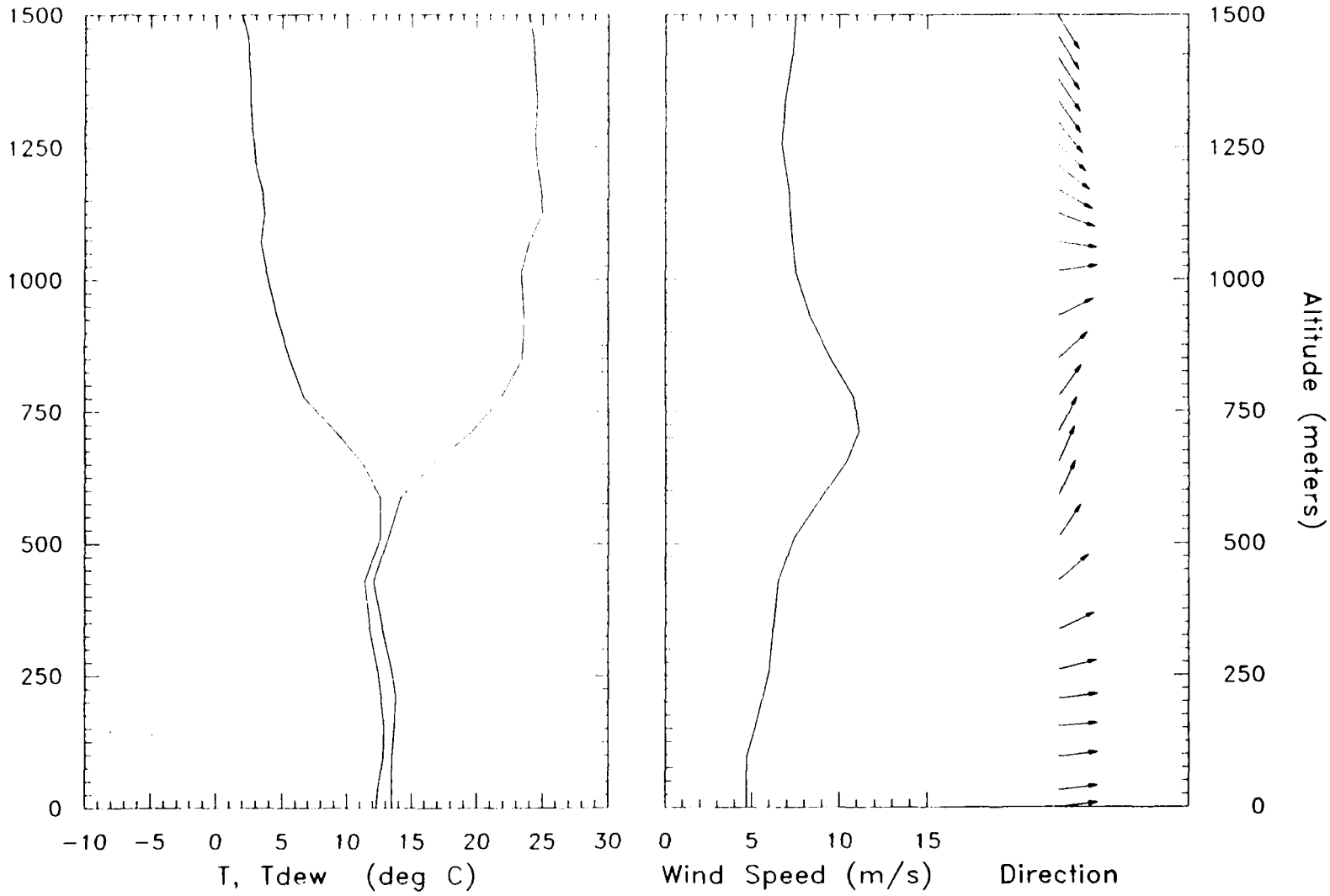
R/V Silver Prince: 0.2 km S, 11.4 km W of Moss Landing – 22 SEP 87 10:12 PST



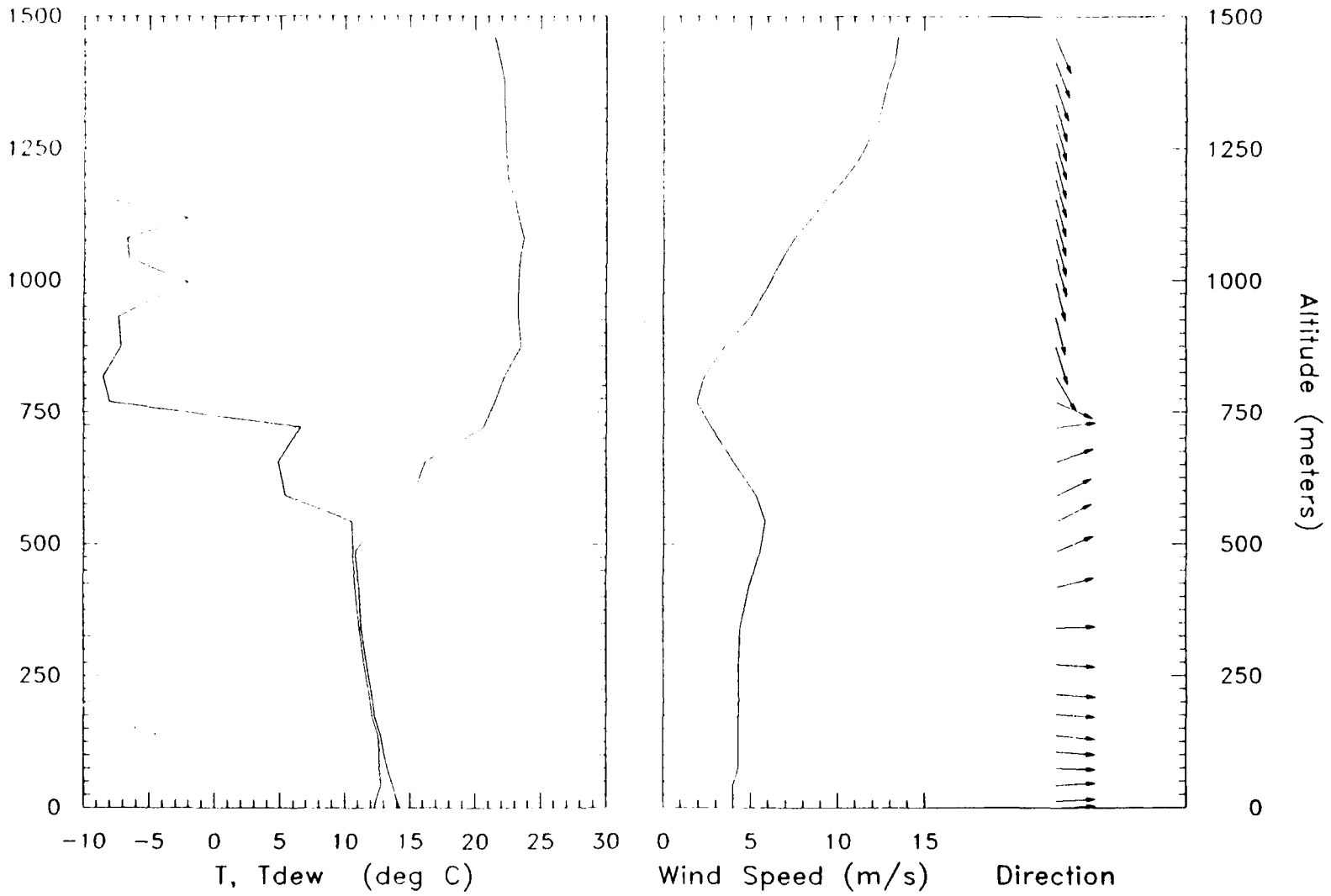
R/V Silver Prince: 0.0 km S, 11.4 km W of Moss Landing – 22 SEP 87 12:41 PST



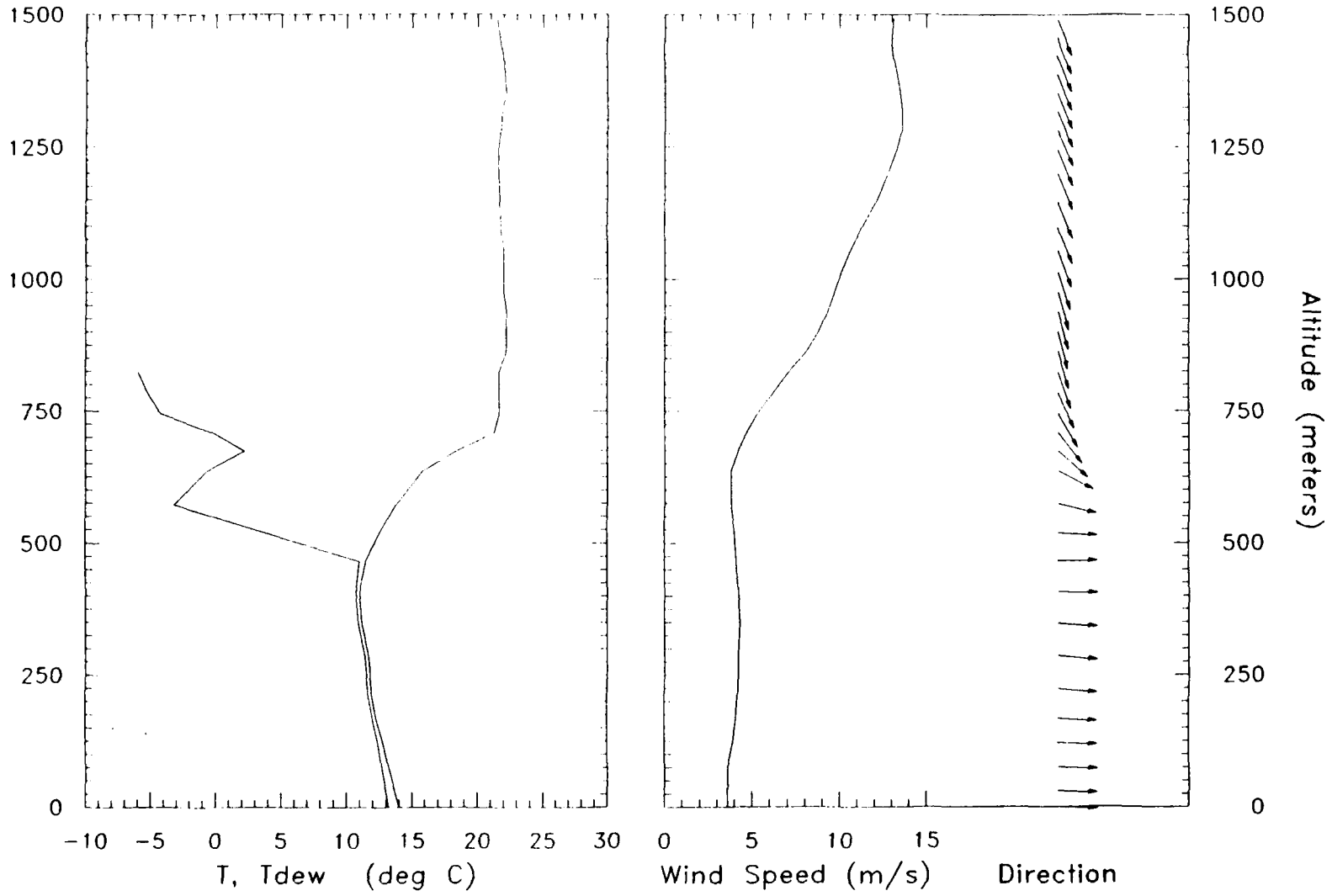
R/V Silver Prince: 0.2 km S, 11.2 km W of Moss Landing – 22 SEP 87 14:53 PST



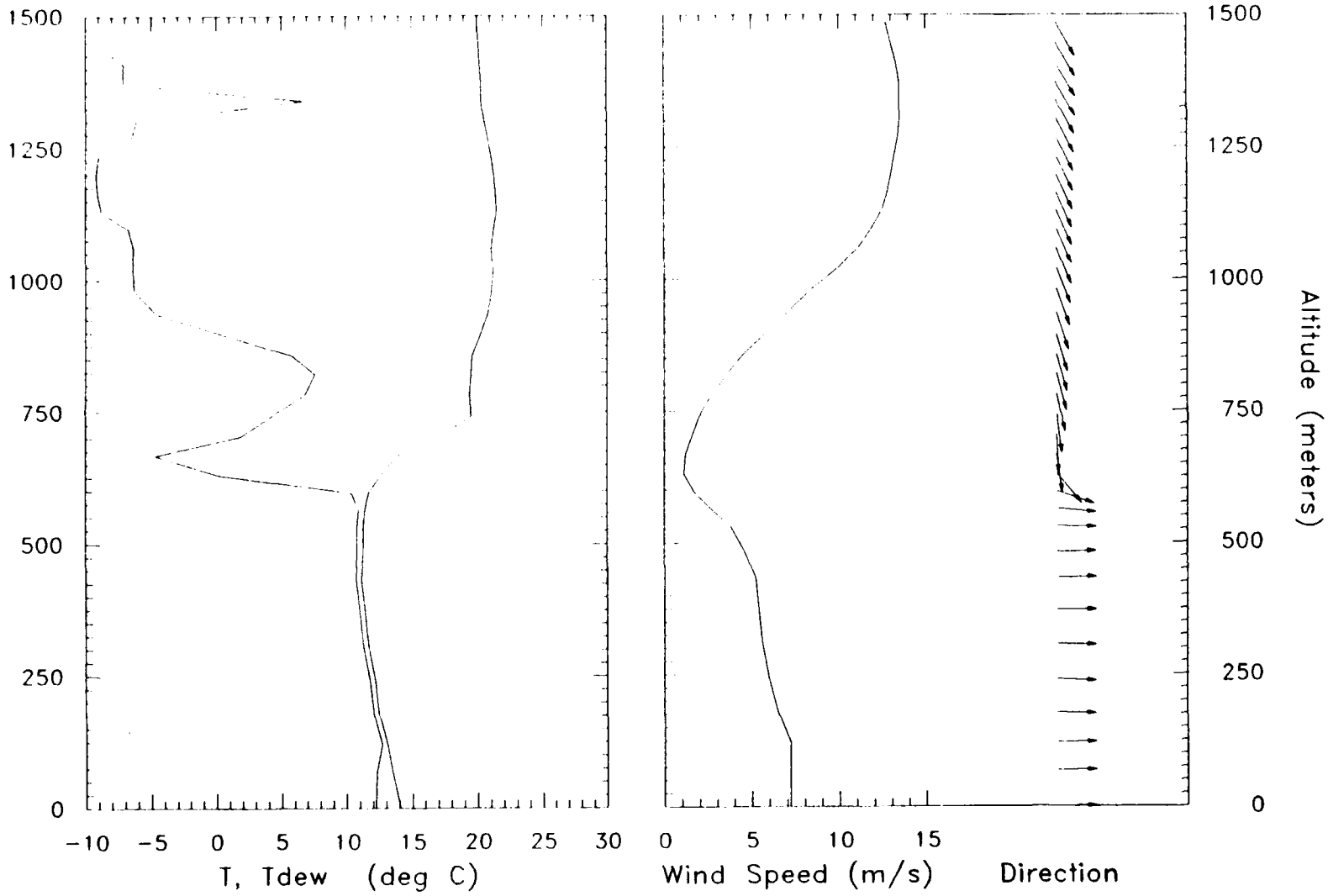
R/V Silver Prince: 0.2 km S, 11.2 km W of Moss Landing – 23 SEP 87 13:23 PST



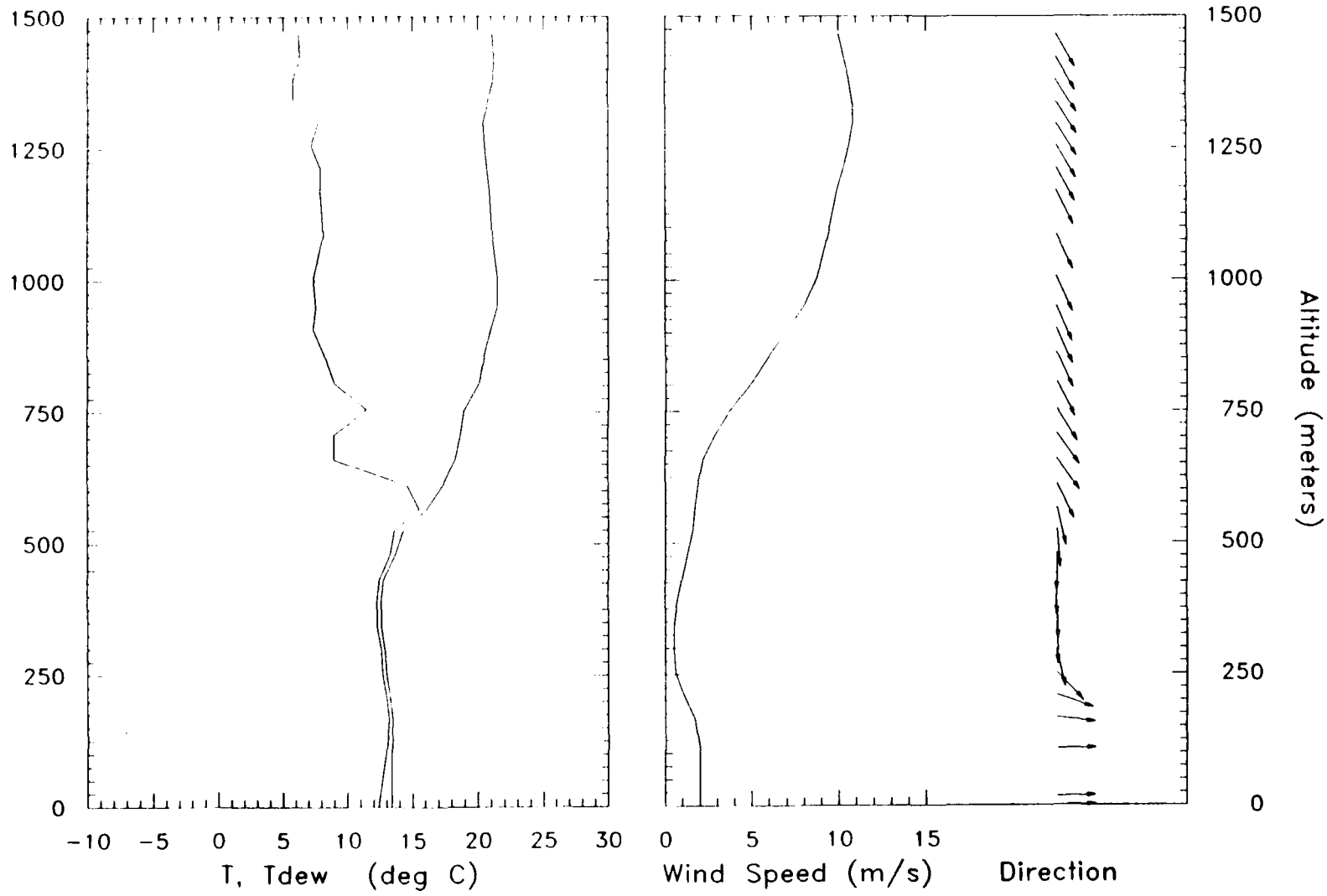
R/V Silver Prince: 0.0 km S, 11.2 km W of Moss Landing - 23 SEP 87 16:03 PST



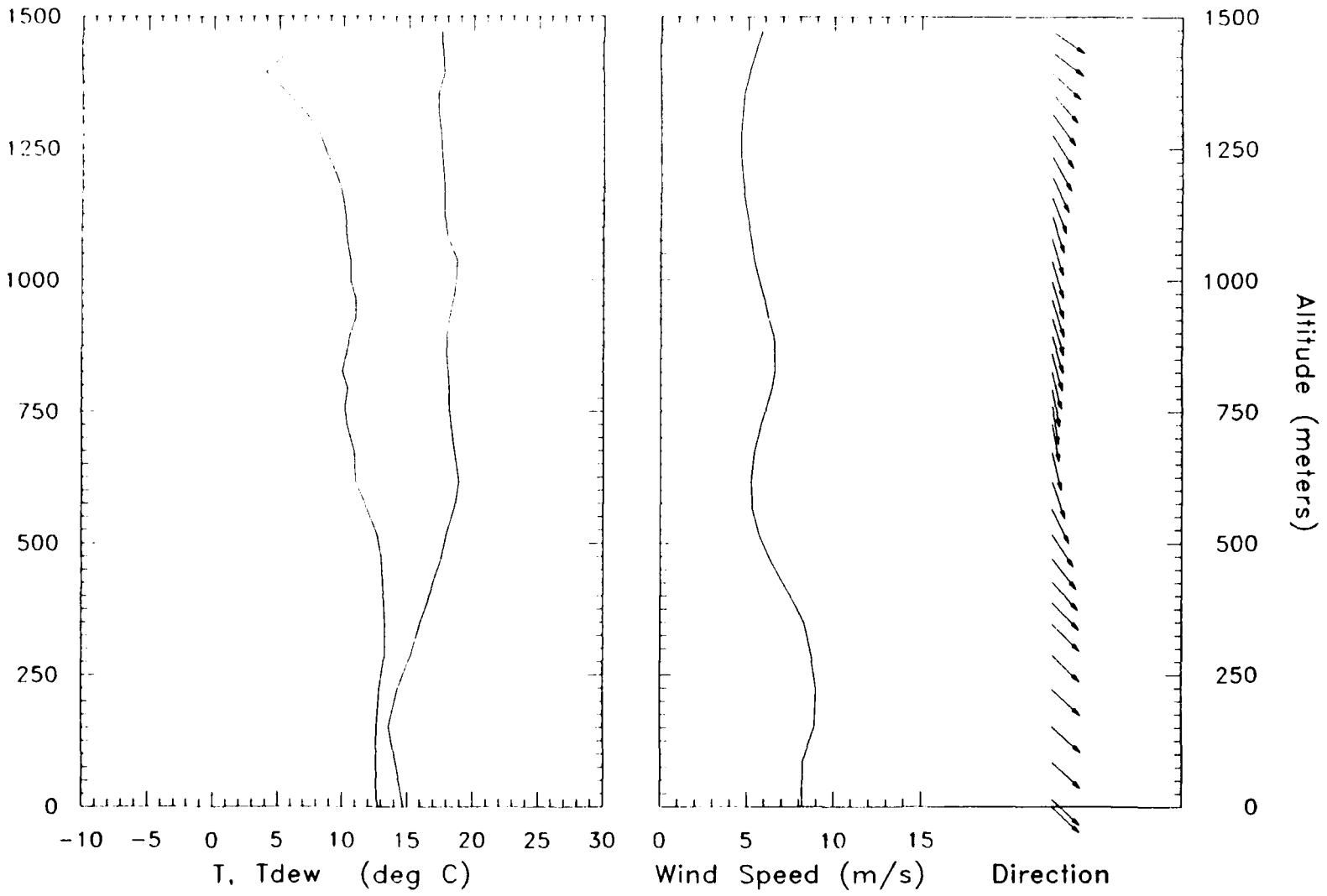
R/V Silver Prince: 0.2 km S, 11.4 km W of Moss Landing – 23 SEP 87 18:29 PST



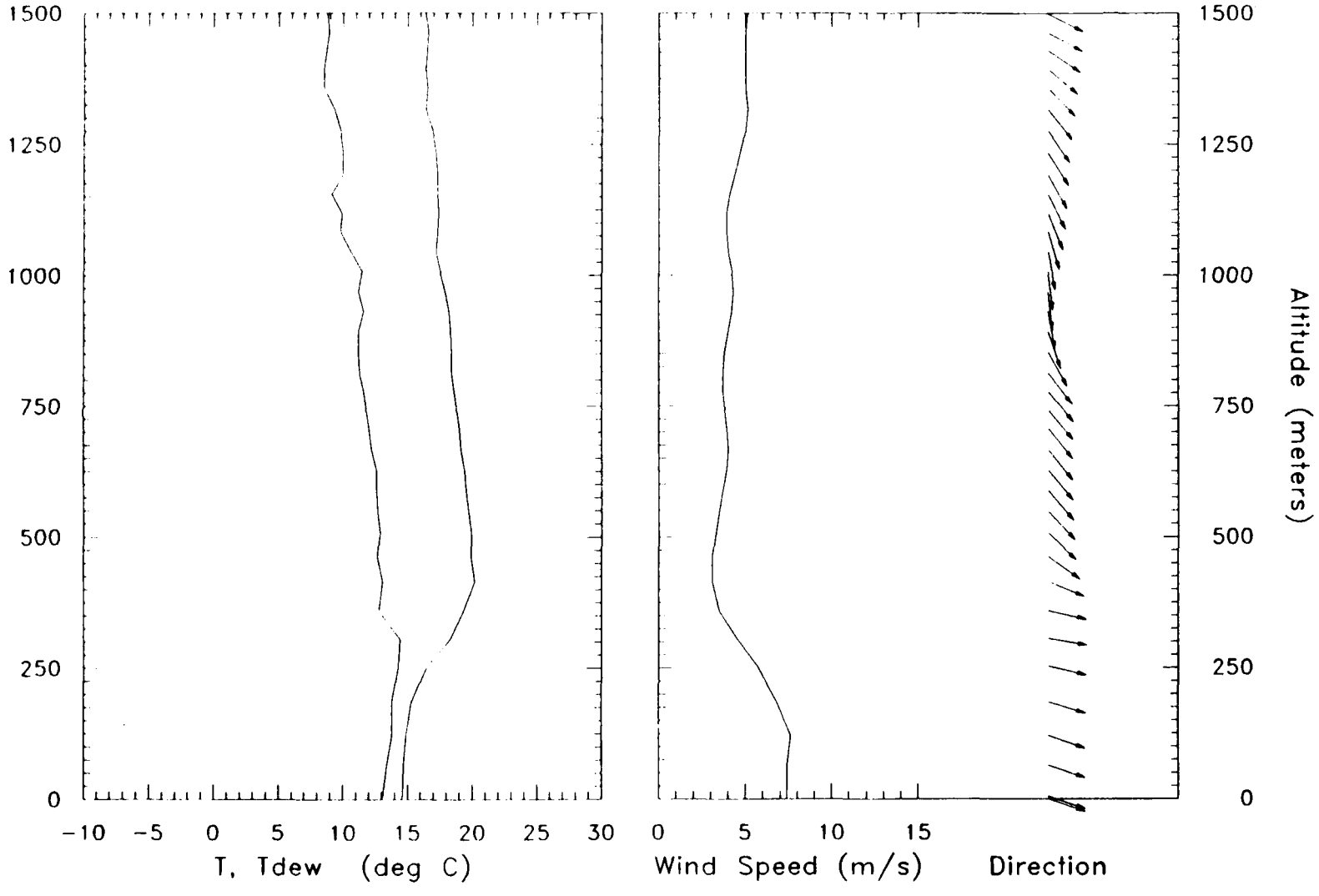
R/V Silver Prince: 0.2 km S, 11.7 km W of Moss Landing – 23 SEP 87 20:33 PST



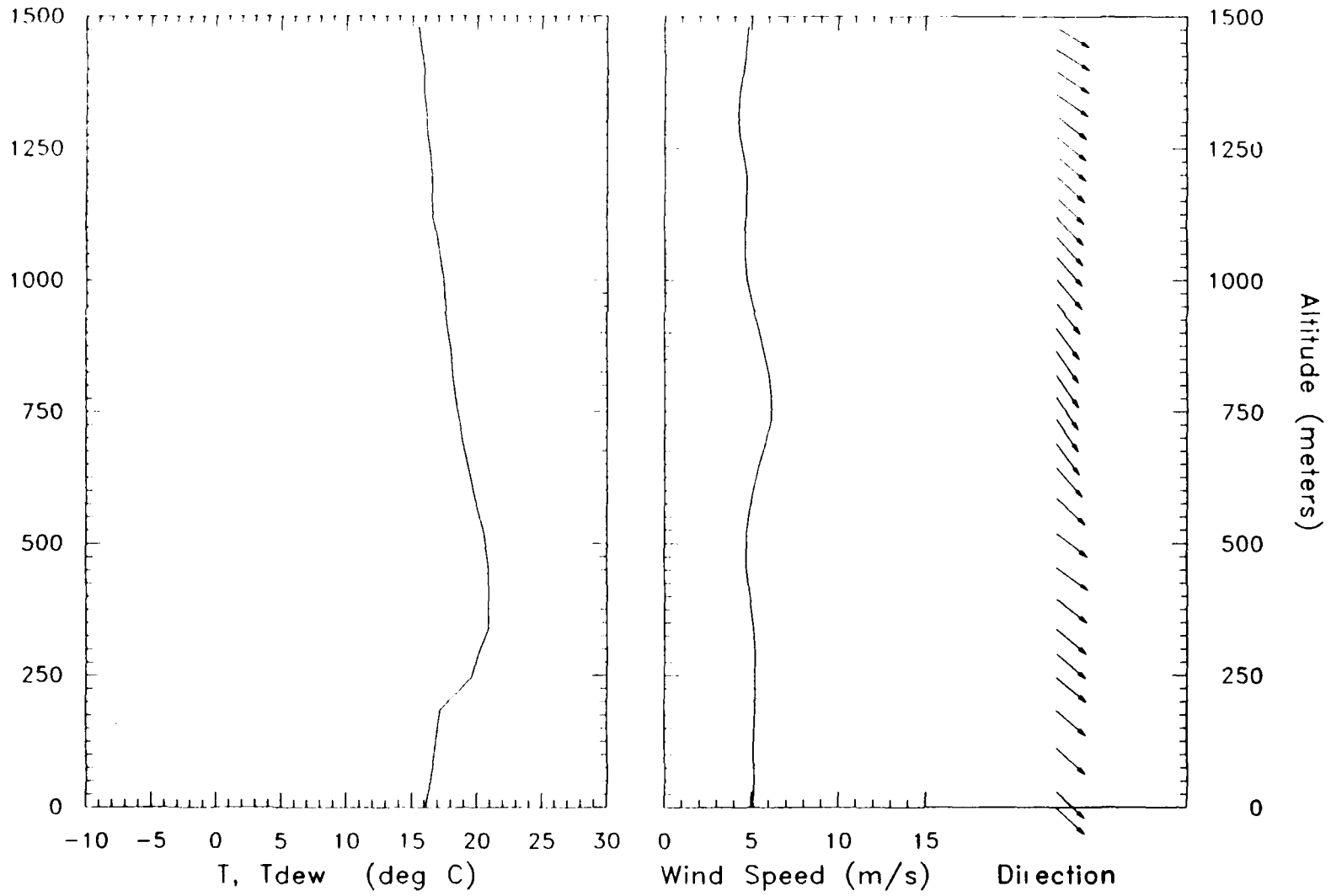
R/V Silver Prince: 1.5 km S, 25.0 km W of Moss Landing – 24 SEP 87 12:20 PST



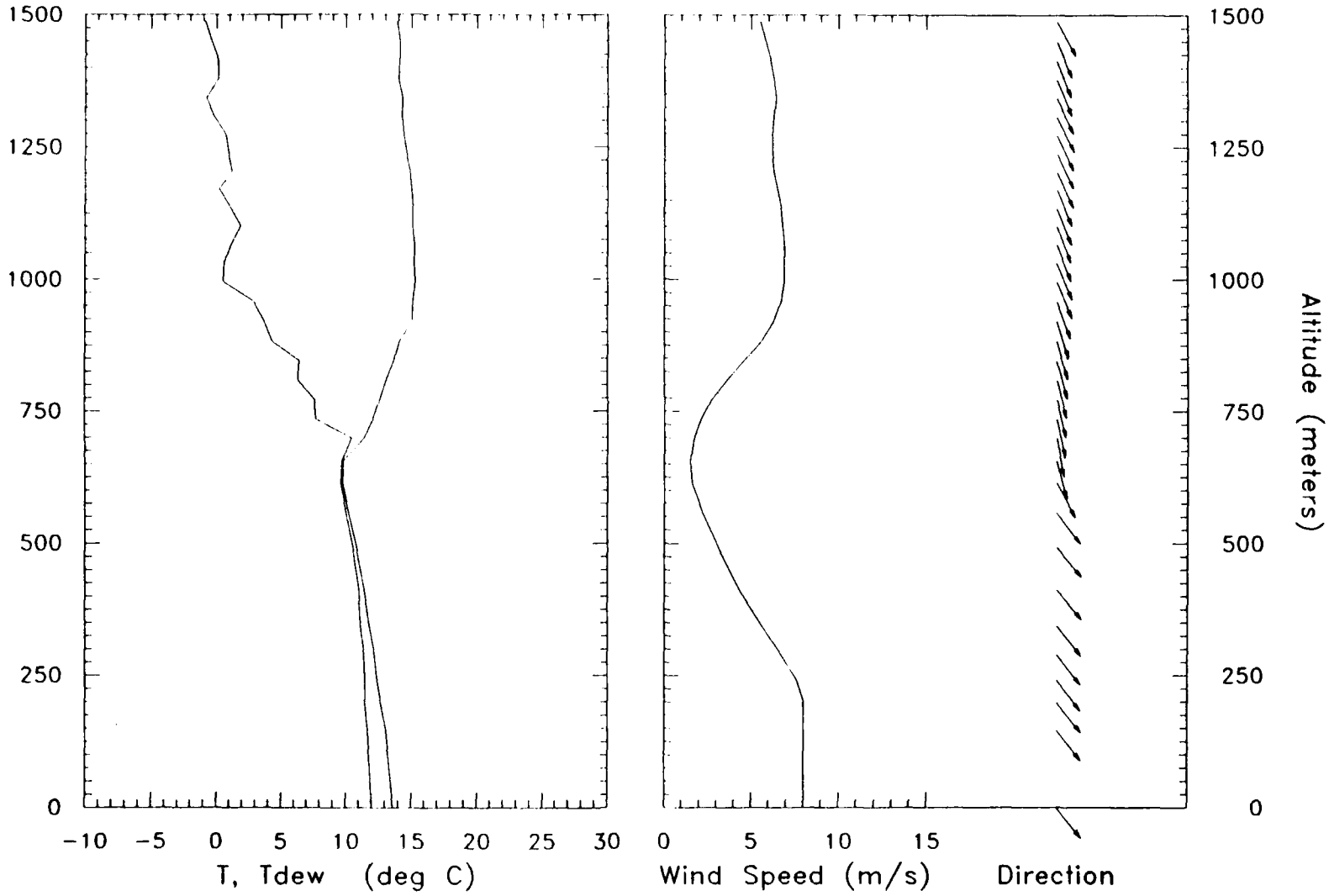
R/V Silver Prince: 0.2 km N, 9.5 km W of Moss Landing – 24 SEP 87 14:20 PST



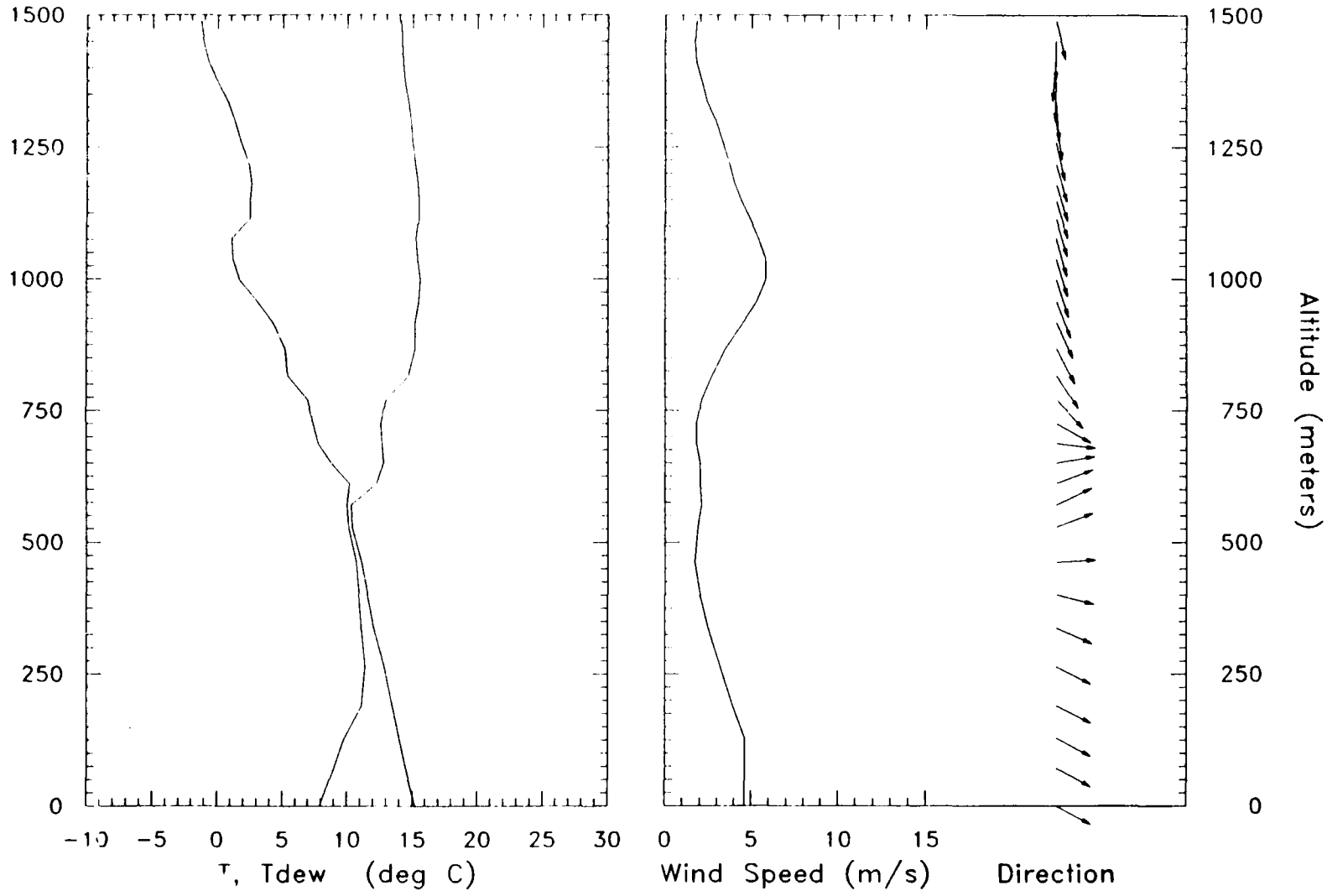
R/V Silver Prince: 0.3 km S, 10.4 km W of Moss Landing – 24 SEP 87 16:13 PST



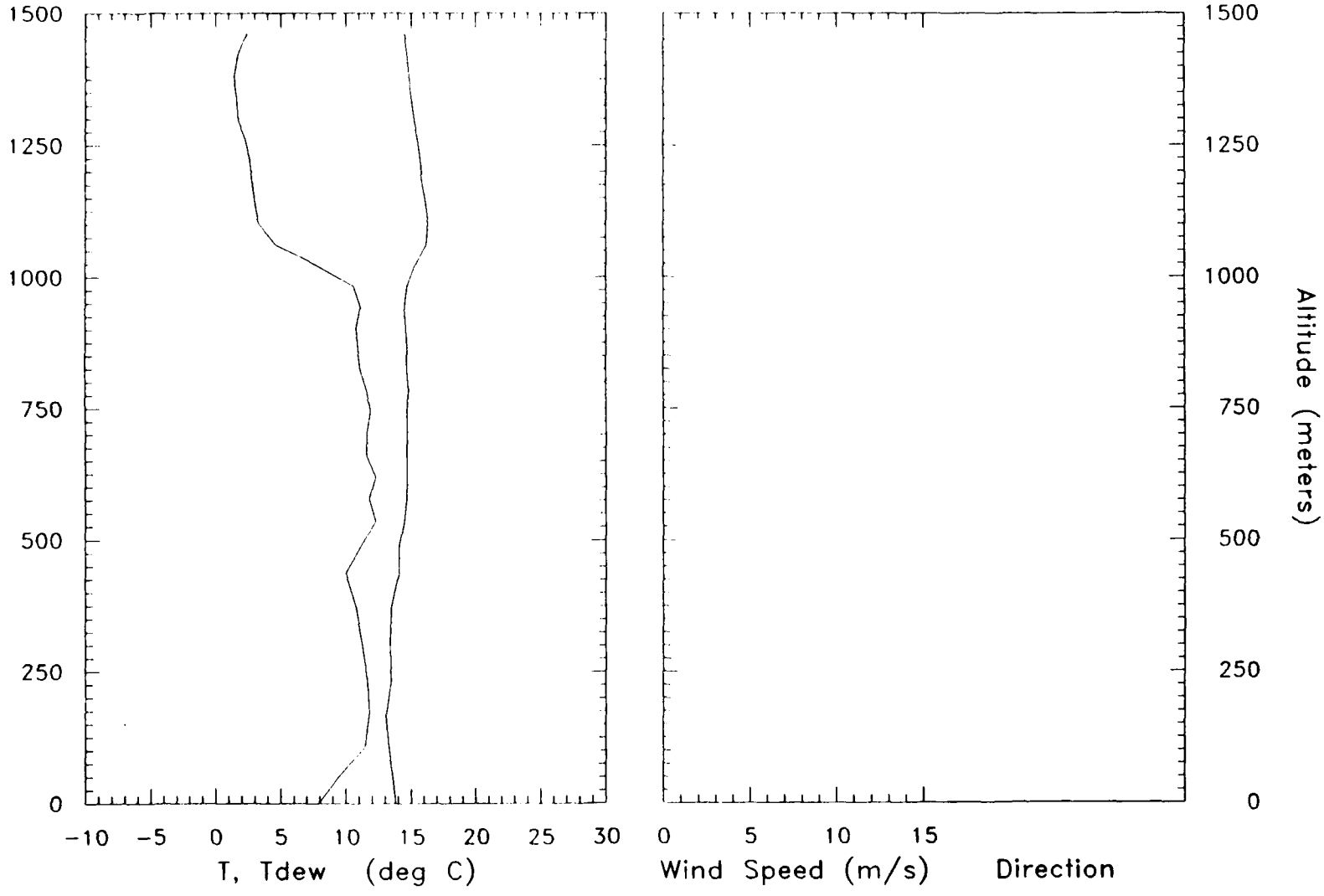
R/V Silver Prince: 0.7 km S, 25.3 km W of Moss Landing – 25 SEP 87 08:13 PST



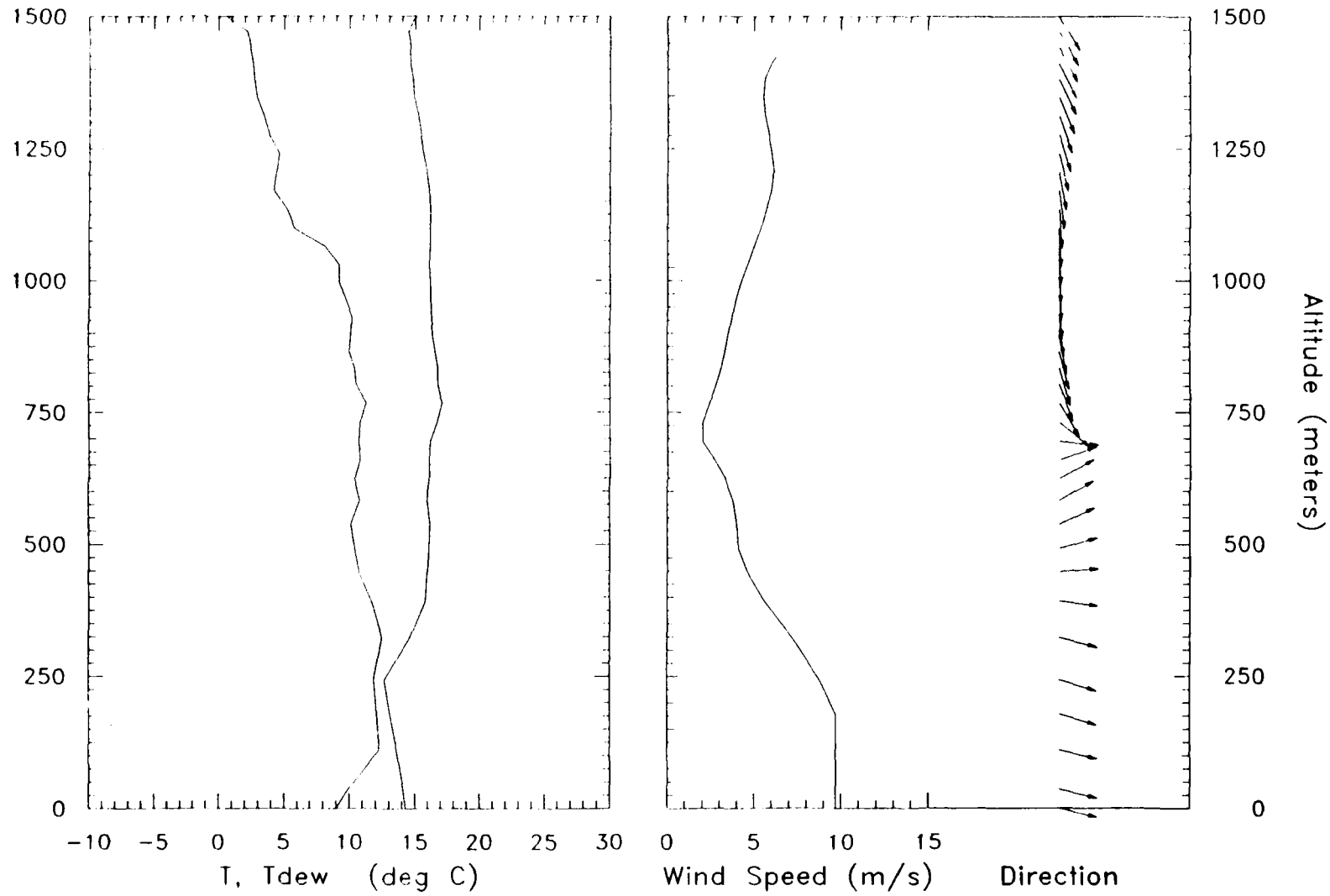
R/V Silver Prince: 0.1 km N, 11.4 km W of Moss Landing – 25 SEP 87 10:25 PST



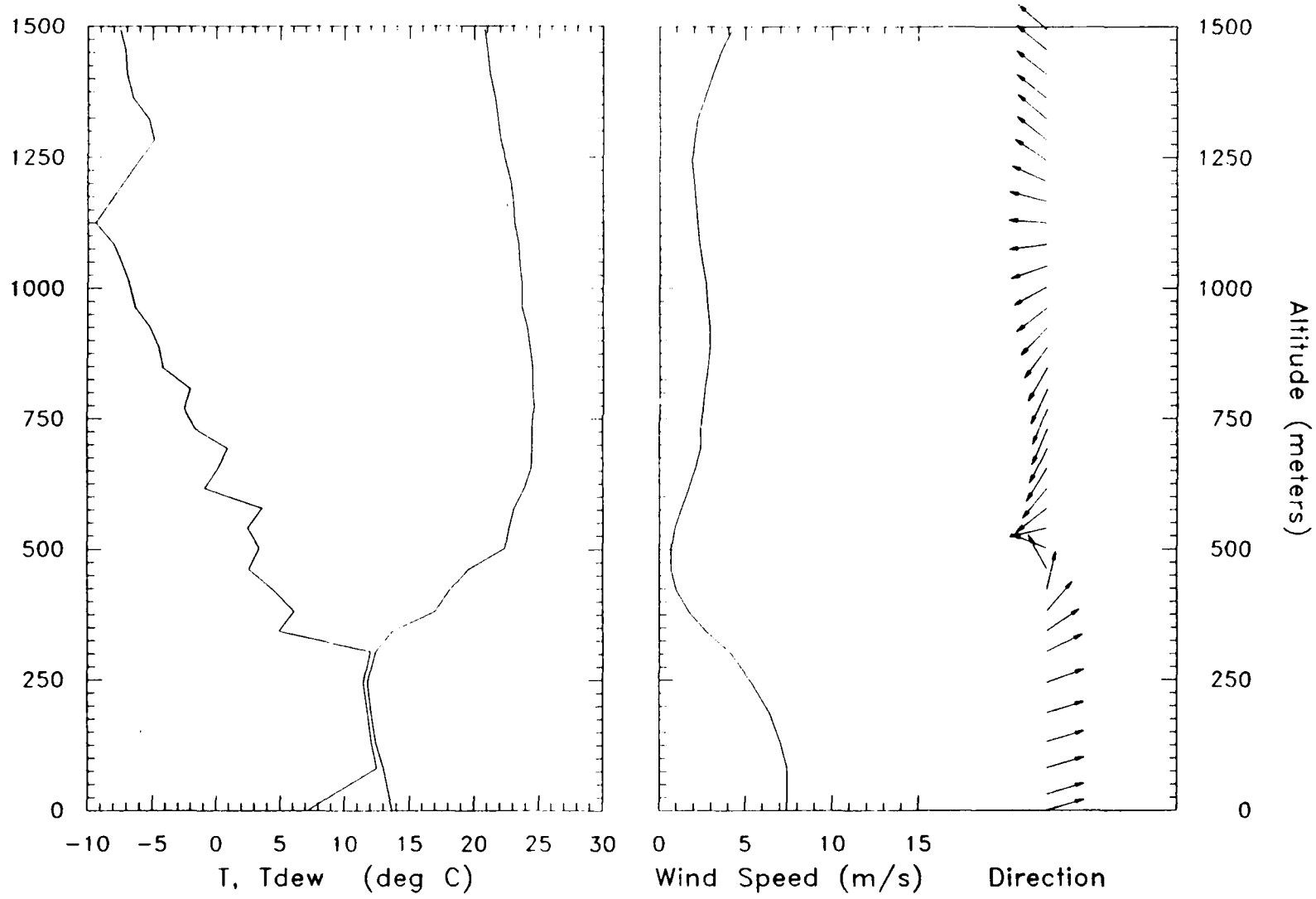
R/V Silver Prince: 0.2 km S, 11.4 km W of Moss Landing – 25 SEP 87 12:58 PST



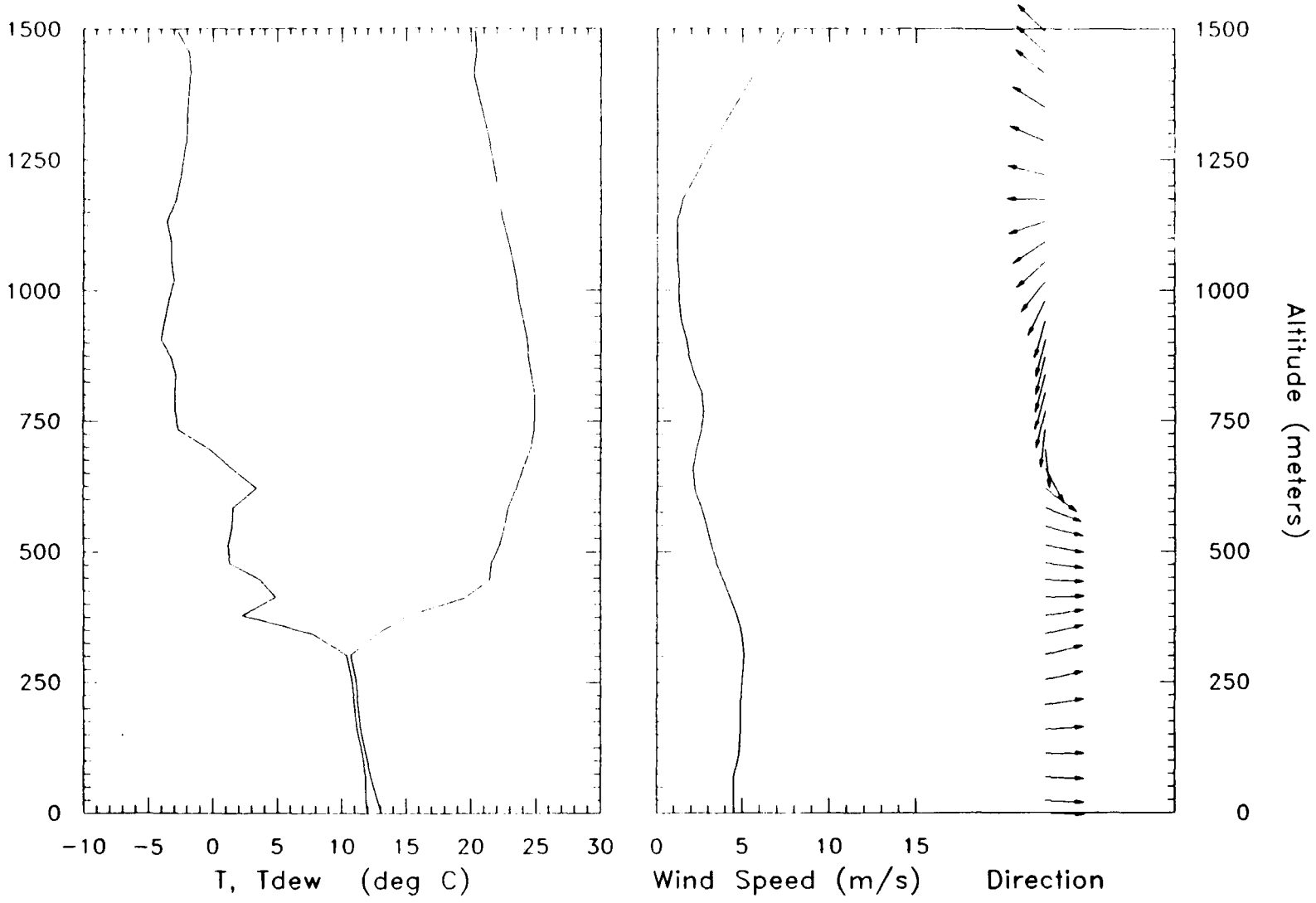
R/V Silver Prince: 0.3 km S, 11.2 km W of Moss Landing – 25 SEP 87 15:23 PST



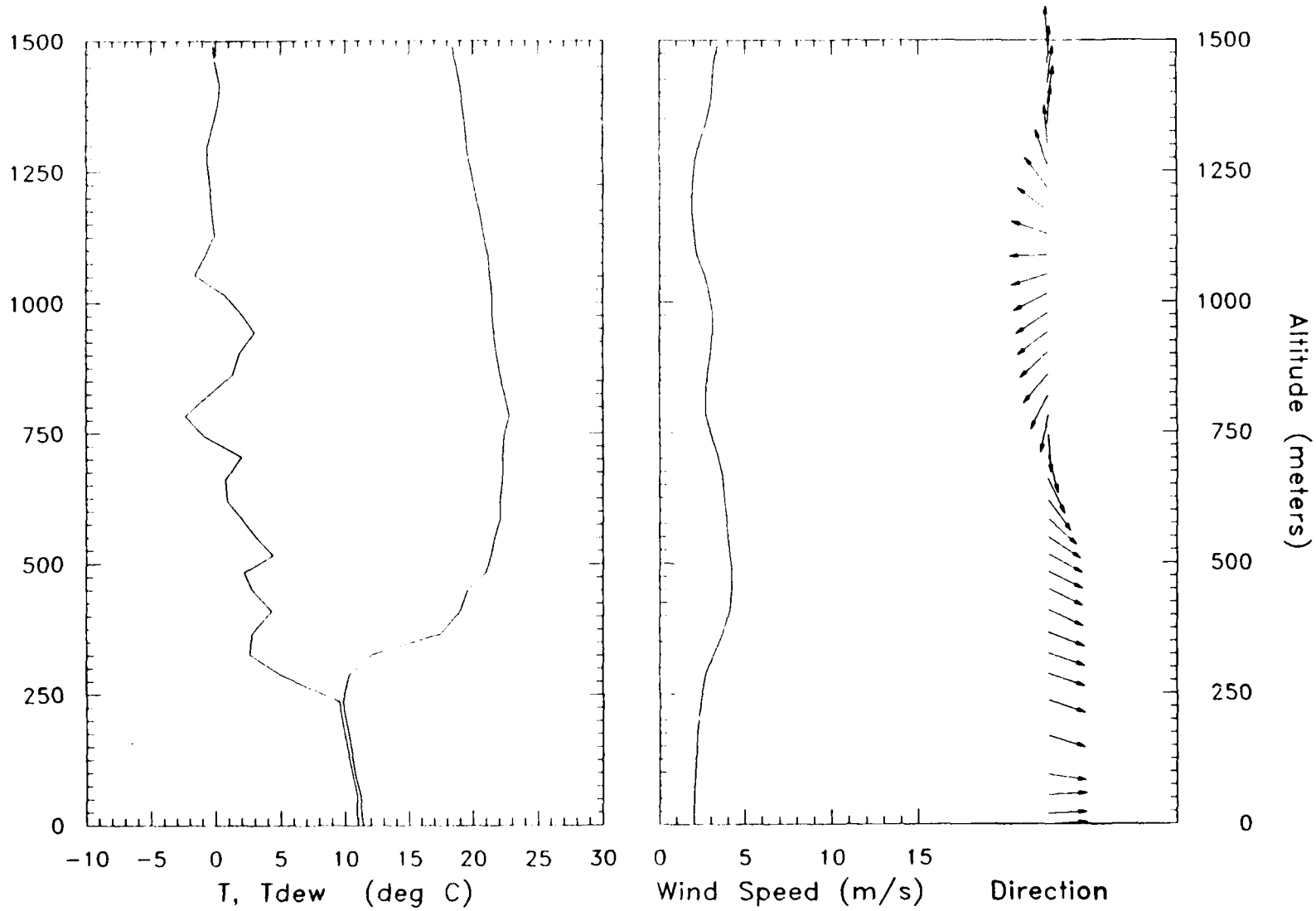
R/V Silver Prince: 0.3 km S, 11.2 km W of Moss Landing – 28 SEP 87 12:53 PST



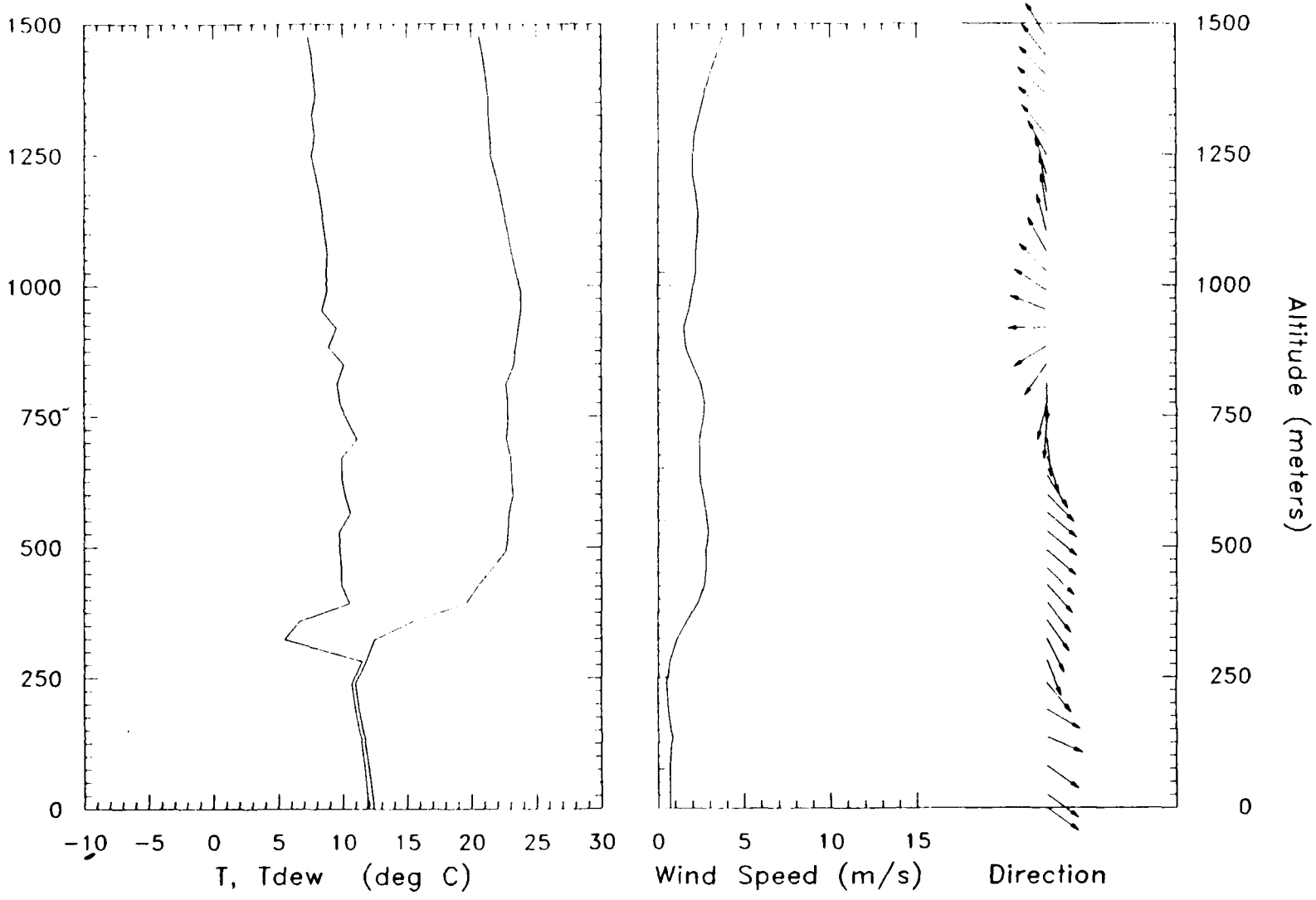
R/V Silver Prince: 0.1 km S, 10.9 km W of Moss Landing – 28 SEP 87 15:24 PST



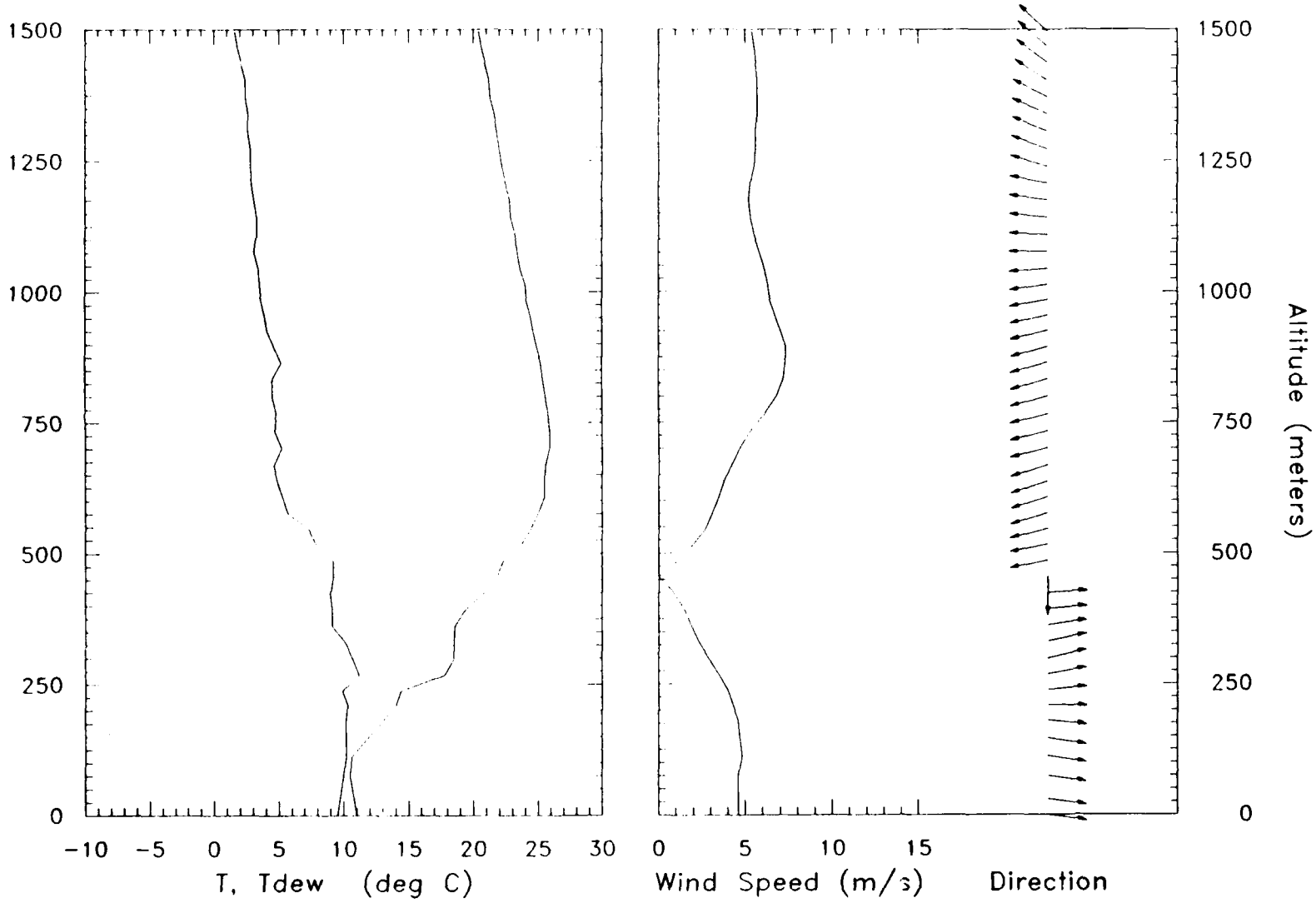
R/V Silver Prince: 0.3 km N, 11.4 km W of Moss Landing – 28 SEP 87 18:11 PST



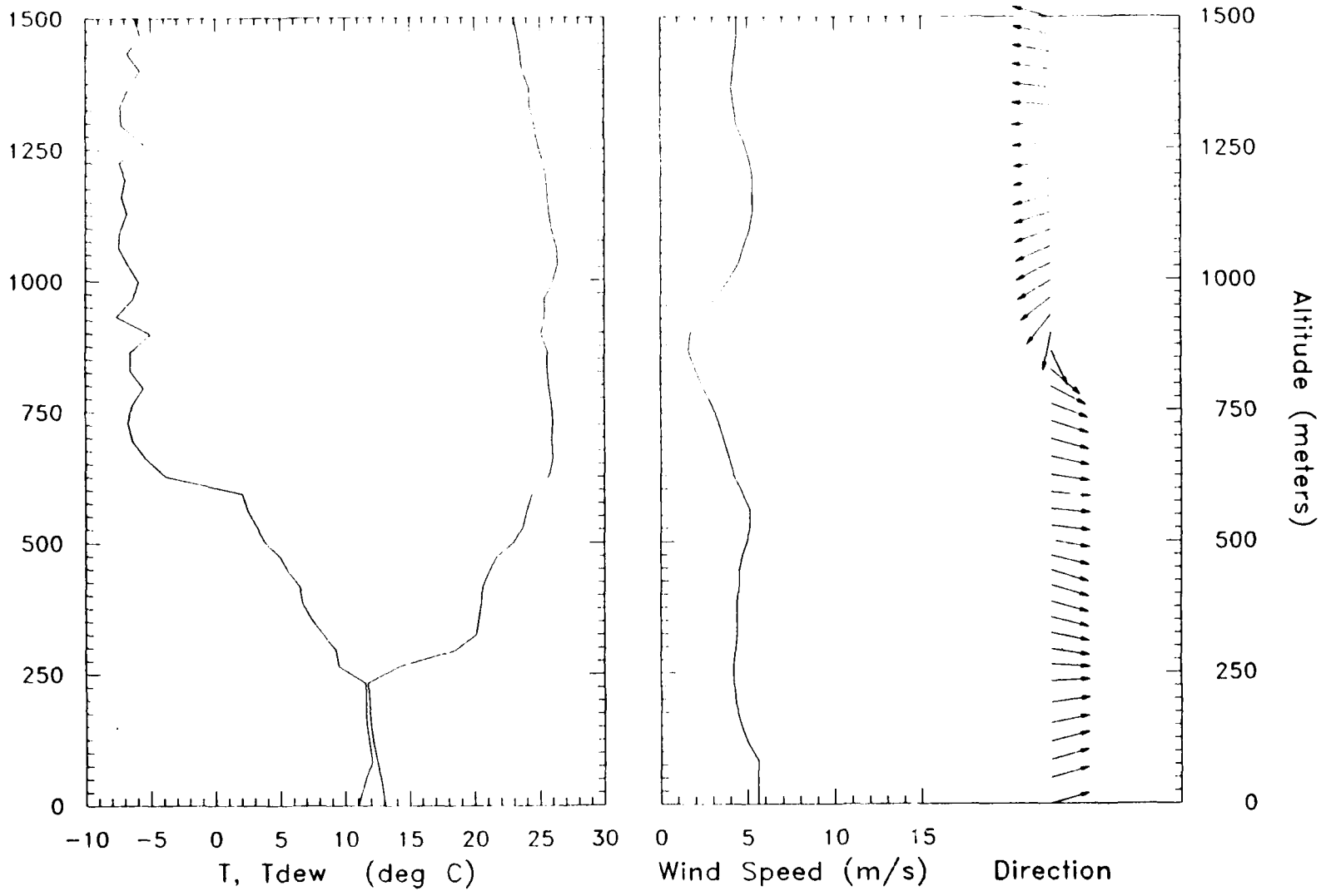
R/V Silver Prince: 0.2 km S, 10.9 km W of Moss Landing - 28 SEP 87 20:04 PST



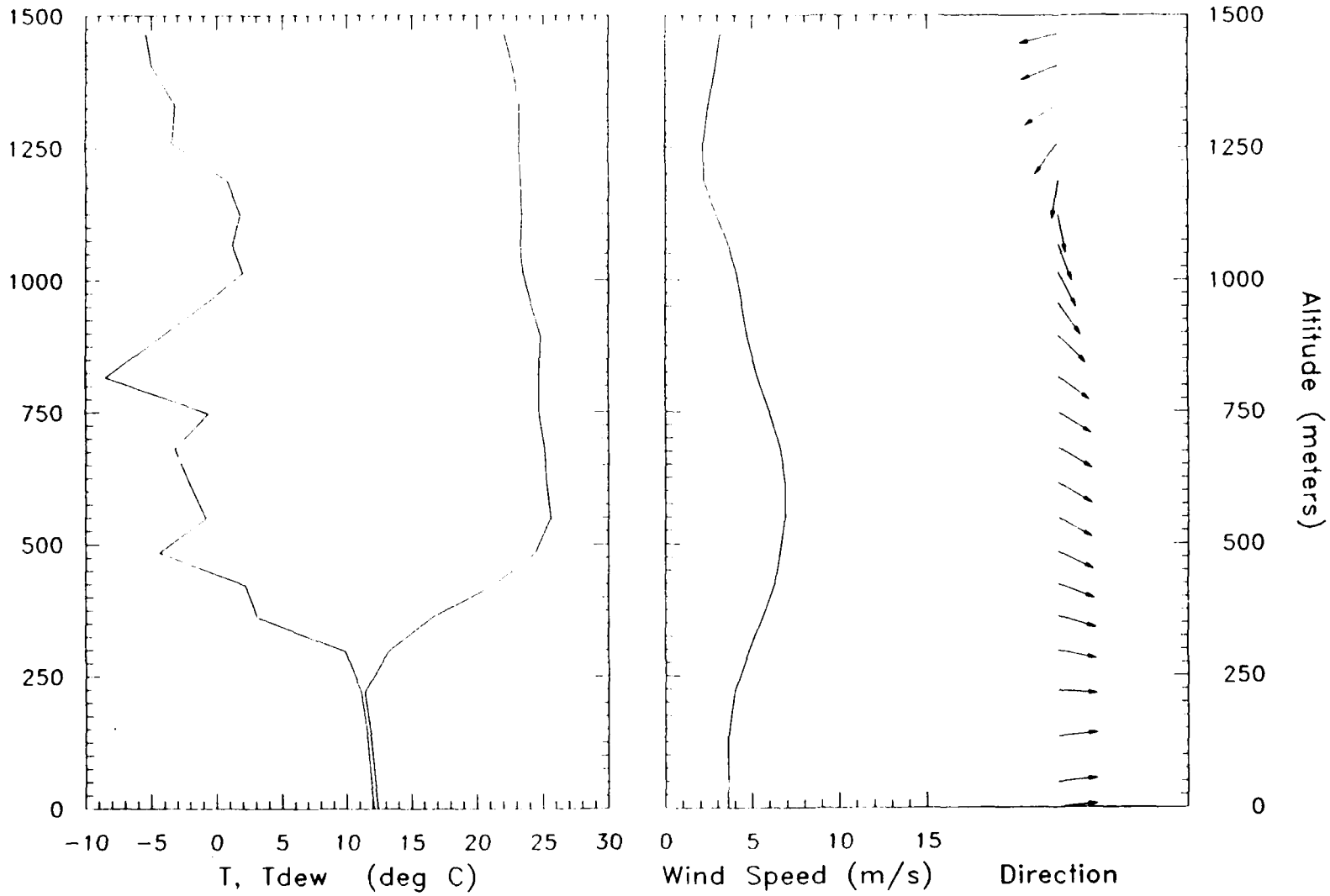
R/V Silver Prince: 0.2 km S, 11.9 km W of Moss Landing - 29 SEP 87 12:59 PST



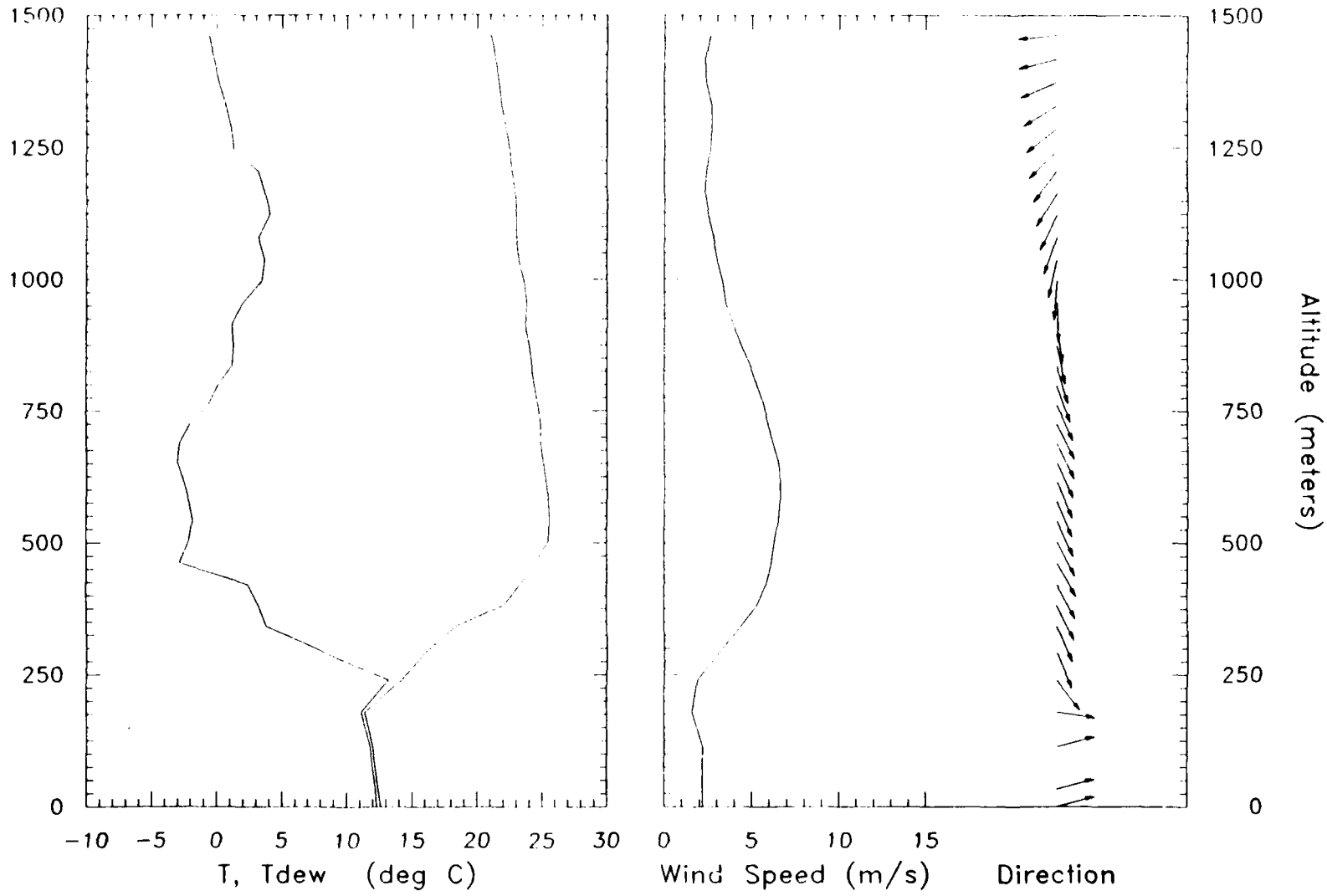
R/V Silver Prince: 0.2 km S, 11.2 km W of Moss Landing - 29 SEP 87 15:20 PST



R/V Silver Prince: 0.1 km S, 11.4 km W of Moss Landing - 29 SEP 87 17:48 PST



R/V Silver Prince: 0.0 km N, 11.4 km W of Moss Landing – 29 SEP 87 19:54 PST



19. REFERENCE

Intrieri, J. M., C. G. Little, W. J. Shaw, R. M. Banta, P. A. Durkee, and R. M. Hardesty, 1989: The Land/Sea Breeze Experiment (LASBEX). Bull. Am. Meteor. Soc. (submitted for publication).

20. ACKNOWLEDGEMENTS

We are grateful to the Moss Landing Marine Laboratories, the Monterey Bay Aquarium, and the Scripps Institution of Oceanography for graciously providing us with excellent surface data for the LASBEX measurement period. This work was prepared for the Naval Environmental Prediction Research Facility and funded by NEPRF work request N685687WR67635-12 AUG 87 and by the Naval Postgraduate School.

21. DISTRIBUTION LIST

	Number of Copies
Defense Technical Information Center Cameron Station Alexandria, VA 22304-6145	2
Research Administration, Code 012 Naval Postgraduate School Monterey, CA 93943-5000	1
Library, Code 0142 Naval Postgraduate School Monterey, CA 93943-5000	2
Library Naval Oceanographic and Atmospheric Laboratory Monterey, CA 93943-5006	1
Library Monterey Bay Aquarium 886 Cannery Row Monterey, CA 93940	1
Library Moss Landing Marine Laboratories PO Box 456 Moss Landing, CA 95093	1
Library Scripps Institution of Oceanography PO Box 2367 La Jolla, CA 92037	1
Dr. Robert M. Banta NOAA/WPL WP/2 325 Broadway Boulder, CO 80303	1
Dr. Kenneth L. Davidson, Code 63Ds Naval Postgraduate School Monterey, CA 93943-5000	1
Dr. Philip A. Durkee, Code 63De Naval Postgraduate School Monterey, CA 93943-5000	1
Ms. Janet Intrieri NOAA/WPL WP/2 325 Broadway Boulder, CO 80303	1

Mr. R. J. Lind, Code 63Ln Naval Postgraduate School Monterey, CA 93943-5000	1
Dr. C. Gordon Little, Code 63Lt Naval Postgraduate School Monterey, CA 93943-5000	1
Dr. William J. Shaw, Code 63Sr Naval Postgraduate School Monterey, CA 93943-5000	30