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BOTTOM MOORED CURRENT METER
DATA FROM THE SOUTHEAST
HANCOCK SEAMOUNT IN APRIL 1987

Shannon C. Raugust, Russell E. Brainard
and Roland W. Garwood, Jr.

June 1988

Data Report for Period
12 April 1987 - 27 April 1987

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Prepared for:
Office of Naval Research
Ocean Sciences and Technology Division, Code 422PO
ington, VA 22217

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L 208.1412
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This work was prepared in conjunction with research sponsored by the Office of Naval Research, Ocean Sciences and Technology Division, Code 422PO, Arlington, Virginia, 22217 and funded by the Naval Postgraduate School.

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REPORT DOCUMENTATION PAGE

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| | | | |
|---|--|---|---------------------------------|
| 1. REPORT SECURITY CLASSIFICATION Unclassified | | 1b RESTRICTIVE MARKINGS | |
| 2. SECURITY CLASSIFICATION AUTHORITY | | 3. DISTRIBUTION / AVAILABILITY OF REPORT Approved for public release; distribution unlimited | |
| 4. DECLASSIFICATION / DOWNGRADING SCHEDULE | | 5. MONITORING ORGANIZATION REPORT NUMBER(S) | |
| PERFORMING ORGANIZATION REPORT NUMBER(S) NPS 68-88-008 | | 7a NAME OF MONITORING ORGANIZATION Office of Naval Research | |
| 6a NAME OF PERFORMING ORGANIZATION Naval Postgraduate School | 6b OFFICE SYMBOL (If applicable) 68 | 7b ADDRESS (City, State, and ZIP Code) Ocean Sciences and Technology Division Code 422PO Arlington, VA 22217 | |
| 8. ADDRESS (City, State, and ZIP Code) Monterey, CA 93943-5000 | | 9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER O&MN, Direct funding | |
| 11. NAME OF FUNDING / SPONSORING ORGANIZATION Naval Postgraduate School | 8b OFFICE SYMBOL (If applicable) | 10. SOURCE OF FUNDING NUMBERS | |
| 12. ADDRESS (City, State, and ZIP Code) Monterey, CA 93943-5000 | | PROGRAM ELEMENT NO. | PROJECT NO. |
| | | TASK NO. | WORK UNIT ACCESSION NO. |
| 1. TITLE (Include Security Classification) BOTTOM MOORED CURRENT METER DATA FROM THE SOUTHEAST HANCOCK SEAMOUNT IN APRIL 1987 | | | |
| 2. PERSONAL AUTHOR(S) Shannon C. Raugust, Russell E. Brainard, and Roland W. Garwood, Jr. | | | |
| 3a. TYPE OF REPORT Data | 13b. TIME COVERED FROM 4/12/87 TO 4/27/87 | 14. DATE OF REPORT (Year, Month, Day) June 1988 | 15. PAGE COUNT 84 |
| 6. SUPPLEMENTARY NOTATION | | | |
| 7. COSATI CODES | | 18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number) | |
| FIELD | GROUP | Southeast Hancock Seamount NOAA Ship Townsend Cromwell | |
| | | Bottom Moored Current Meter Ocean Planetary Boundary Layer | |
| 9. ABSTRACT (Continue on reverse if necessary and identify by block number) Two bottom moored current meter arrays were deployed on the Southeast Hancock Seamount (29° 48'N, 179° 04'E) in April 1987. Presented in this report are velocity and temperature data collected from the current meters during this deployment. | | | |
| 20. DISTRIBUTION / AVAILABILITY OF ABSTRACT <input checked="" type="checkbox"/> UNCLASSIFIED/UNLIMITED <input type="checkbox"/> SAME AS RPT. <input type="checkbox"/> DTIC USERS | | 21. ABSTRACT SECURITY CLASSIFICATION UNCLASSIFIED | |
| 22a. NAME OF RESPONSIBLE INDIVIDUAL Shannon C. Raugust | | 22b. TELEPHONE (Include Area Code) (408) 646-3226 | 22c. OFFICE SYMBOL Code 68Rs |

Acknowledgements

Initial funding for this work was provided by the Office of Naval Research for the project "Studies of the Oceanic Planetary Boundary Layer" at the Naval Postgraduate School. Further data processing support was provided by the Naval Postgraduate School under the sponsorship of the Office of Naval Research project "Seamounts and Bottom Friction-Induced Topographic Scale Circulation and Mixing." Assistance and ship time was provided by Dr. George Boehlert and Mr. Chris Wilson of the Honolulu Laboratory, National Marine Fisheries Service. We thank Dr. Don Hansen of the Atlantic Oceanographic and Meteorological Laboratory for contributing current meters. Dr. Jim Schumacher, Mr. Tom Jackson, Mr. Bill Parker, Mr. Peter Proctor and other personnel at the Pacific Marine Environmental Laboratory contributed their advice and support which we gratefully acknowledge. Final graphics and calculations were done at the W. R. Church Computer Center, Naval Postgraduate School.

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Foreword

The data presented here were collected with the assistance of several institutions. Funding support was provided by the Office of Naval Research, and ship time on the NOAA ship Townsend Cromwell was provided by the Honolulu Laboratory of the National Marine Fisheries Service. The Atlantic Oceanographic and Meteorological Laboratory, NOAA supplied three of the current meters. The moorings were prepared and initial data processing was done at the Pacific Marine Environmental Laboratory, NOAA. Instrument calibration was performed by the Northwest Regional Calibration Center, Bellevue, Washington.

1. Introduction

Two bottom moored current meter arrays were deployed on the South East Hancock Seamount ($29^{\circ} 48' N$, $179^{\circ} 04' E$) in April 1987. The purpose of the project was to observe for the first time the currents near the summit of this seamount, to determine dominant short period (10 minutes - 50 hours) constituents and variability for the current field and to provide data for future current meter array design. The period of observations was limited to 15 days because of research vessel scheduling.

Presented in this report are velocity and temperature data collected from the current meters during this deployment. The report consists of six sections. The field program is discussed in Section 2. Section 3 contains the data editing steps and presents the raw 5 minute time series, histograms and statistics. Hourly time series are presented in section 4, and low pass filtered six-hourly time series are presented in section 5. Section 6 contains the composited low pass time series for each mooring based on the time series presented in section 5. Variance density spectra for current velocities and temperatures are given in section 7.

2. Field Program

The two moorings were deployed on the South East Hancock Seamount from the NOAA ship Townsend Cromwell on 12 April 1987 and were recovered on 27 April 1987. A large scale fisheries survey was conducted concurrent with the mooring deployment. The location of the South East Hancock Seamount is shown in Figure 1 on page 3. Mooring 87V1 was deployed at or very near to the highest elevation of the seamount at 29° 48.38' N, 179° 03.51' E in 260 meters of water. Mooring 87V2 was deployed on the flank of the seamount at 29° 48.89' N, 179° 03.25' E at a depth of approximately 390 meters. The two moorings are separated laterally by approximately 1030 meters. Originally, this second mooring was intended to be anchored at a depth of 350 meters. However, the observed temperature and pressure records indicate that the actual depth exceeded the intended depth by approximately 50 meters. It is believed that the anchor and mooring failed to take hold at the intended depth due to an unexpectedly steep bottom slope on the seamount flank. A schematic of the configuration of the moorings as actually deployed is shown in Figure 2 on page 4.

Mooring 87V1 had 5 Aanderaa RCM-4 current meters mounted at 50, 165, 215, 255 and 260 meters below the surface. In this report, these meters are given the labels V11, V12, V13, V14 and V15 respectively. Mooring 87V2 had 3 Aanderaa RCM-4 current meters mounted at 215, 265 and 390 meters below the surface. The design depths had actually been 165, 215 and 340 meters respectively. The meters on 87V2 were given the labels V23, V25 and V26 to simplify comparisons with the meters on 87V1 that were situated at about the same depths.

The launch and recovery data for each mooring are summarized in Table 1 on page 5.

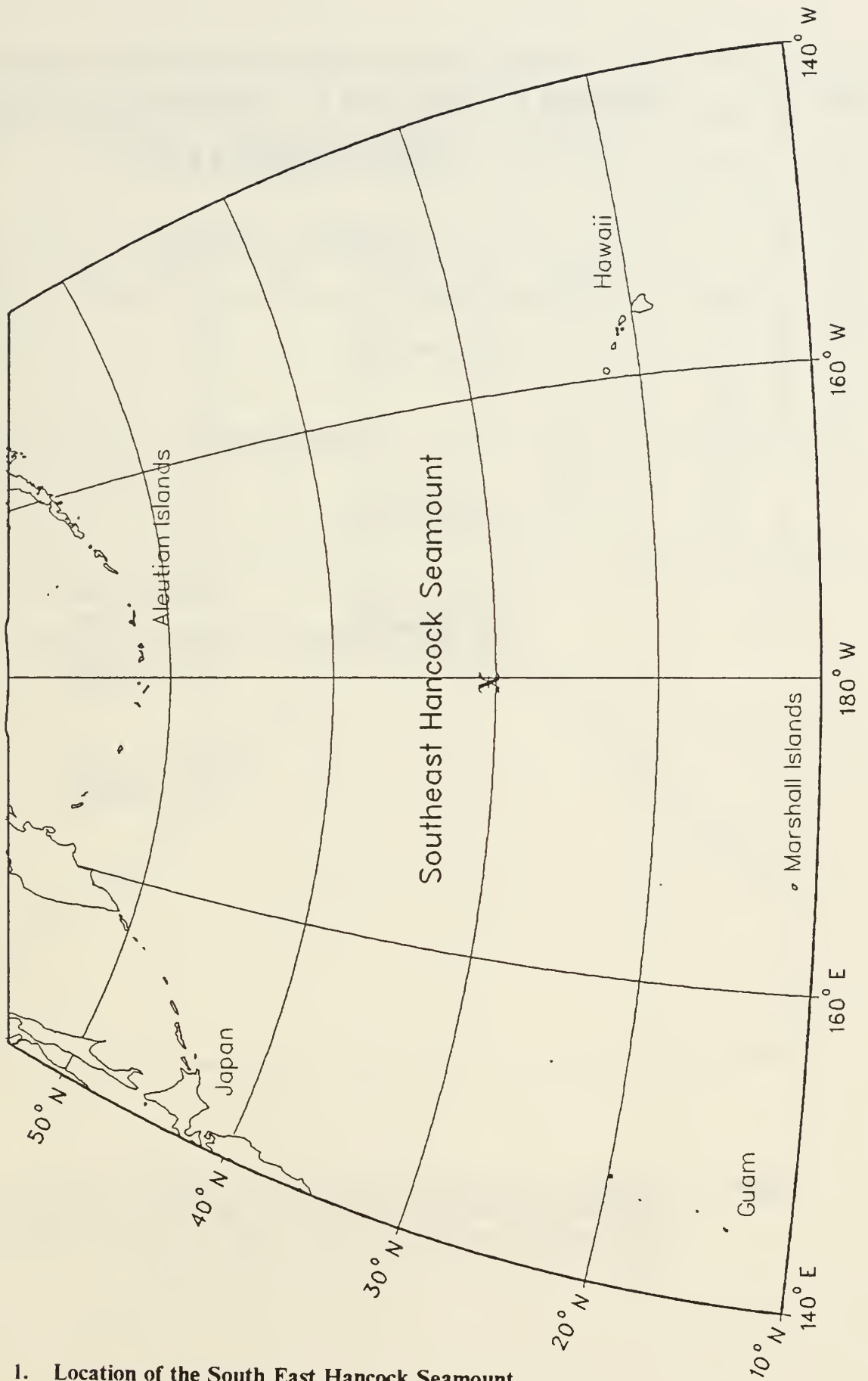


Figure 1. Location of the South East Hancock Seamount.

SOUTHEAST HANCOCK SEAMOUNT

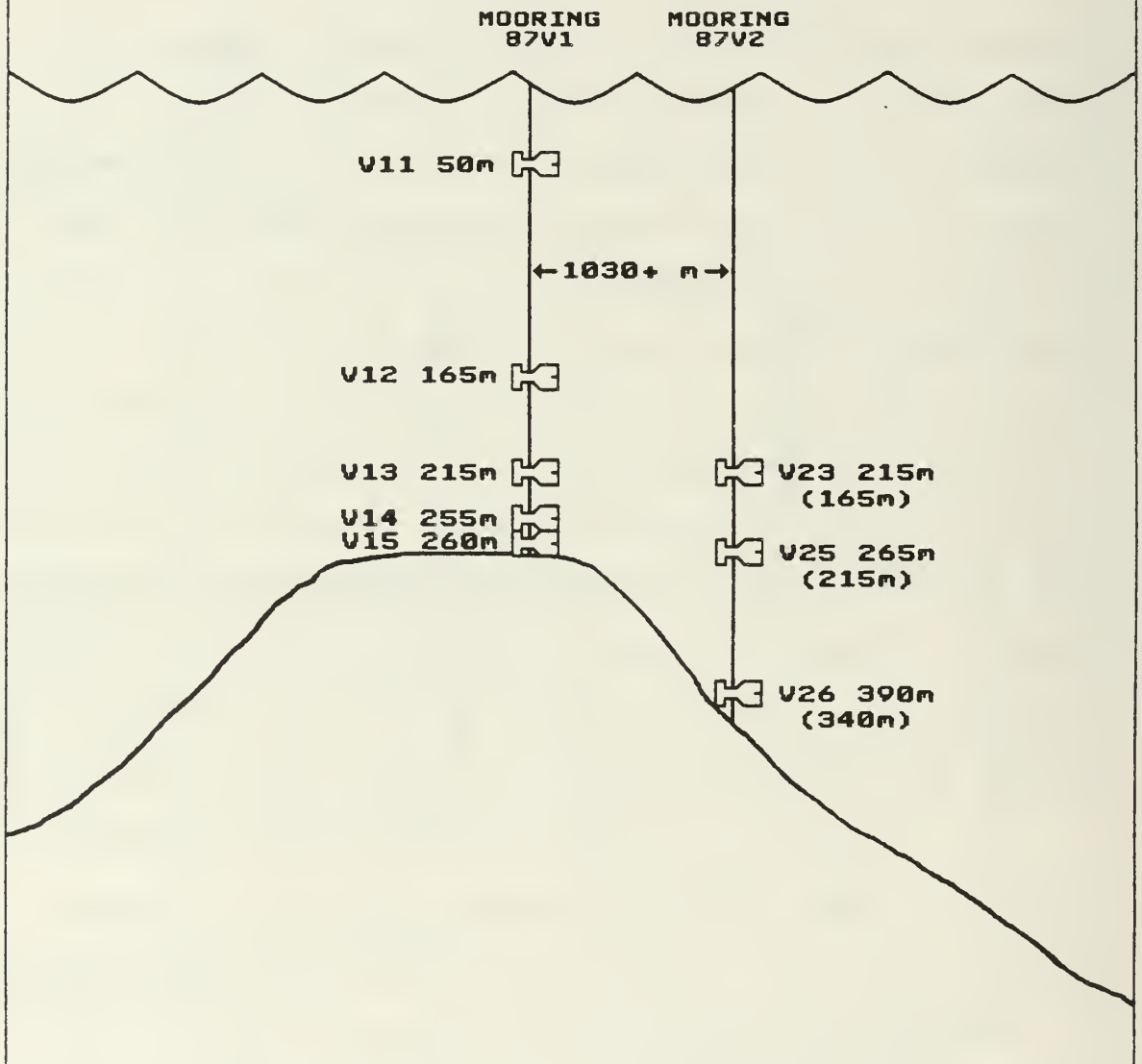


Figure 2. Deployment configuration of moorings 87V1 and 87V2.: The depths in parentheses for mooring 87V2 are the design depths. The actual deployment depths are noted to the right of the meter labels. Vertical axis: 1 inch = 100 meters. Horizontal axis: Not to scale.

| Mooring ID | Location Lat/Long | Bottom Depth (M) | Launch Time GMT | Recovery Time GMT | Current Meter Depth (M) | RCM-4 Current Meter Serial # |
|------------|------------------------------|------------------|-------------------|-------------------|-------------------------|------------------------------|
| 87V1 | 29° 48.38' N 179° 3.51' E | 260 | 0500 12 Apr 87 | 1920 27 Apr 87 | 50 | 2760 |
| | | | | | 165 | 0407 |
| | | | | | 215 | 5211 |
| | | | | | 255 | 5644 |
| | | | | | 260 | 5643 |
| 87V2 | 29° 48.89' N 179° 3.25' E | 390 | 2220 12 Apr 87 | 2045 27 Apr 87 | 215 | 0408 |
| | | | | | 265 | 2759 |
| | | | | | 390 | 5645 |

Table 1. Launch and recovery information

3. Data Editing

The initial post-processing of the data was done at Pacific Marine Environmental Laboratory using three programs: CM1, CME and C2C. Program CM1 was used to buffer the data off the cartridge and transform it into scientific units. Program CME was used to determine data start and stop times and to remove obviously wrong values. Program C2C was used to remove large obviously erroneous spikes and questionable zero speeds. The data were then sent by 9 track tape to the Naval Postgraduate School for final editing and processing. The current meters stored data in 5 minute intervals. The processed current velocity data has been represented here in easterly (U) and northerly (V) components.

The statistics of the basic 5-minute velocity components and temperature data are shown in Table 2 on page 7 and Table 3 on page 8, and histograms and time series are presented in Figure 3 on page 9. Due to a possible bearing failure, current meter V25 recorded a large number of zero speeds in the north and east velocity components, but the temperature data from this meter are unaffected by the problem.

| V11 | | | | |
|--------------|-------------|-----------------|-----------------|-----------------|
| | Mean | St. Dev. | Skewness | Kurtosis |
| U (Cm/Sec) | -9.336 | 9.337 | 0.073 | 2.962 |
| V (Cm/Sec) | 1.246 | 6.445 | -0.846 | 4.124 |
| Temp (Deg C) | 18.023 | 0.707 | -5.763 | 191.313 |
| V12 | | | | |
| | Mean | St. Dev. | Skewness | Kurtosis |
| U (Cm/Sec) | -11.641 | 6.327 | 0.498 | 4.165 |
| V (Cm/Sec) | 4.903 | 6.911 | -0.453 | 3.144 |
| Temp (Deg C) | 15.460 | 0.381 | -20.596 | 811.999 |
| V13 | | | | |
| | Mean | St. Dev. | Skewness | Kurtosis |
| U (Cm/Sec) | -9.436 | 6.861 | 0.129 | 3.042 |
| V (Cm/Sec) | 6.267 | 6.498 | -0.554 | 2.941 |
| Temp (Deg C) | 14.740 | 0.344 | -21.554 | 1175.635 |
| V14 | | | | |
| | Mean | St. Dev. | Skewness | Kurtosis |
| U (Cm/Sec) | -10.902 | 7.896 | 0.143 | 2.761 |
| V (Cm/Sec) | 7.456 | 6.786 | -0.342 | 2.771 |
| Temp (Deg C) | 13.983 | 0.312 | -13.683 | 1113.496 |
| V15 | | | | |
| | Mean | St. Dev. | Skewness | Kurtosis |
| U (Cm/Sec) | -10.356 | 8.013 | 0.241 | 3.645 |
| V (Cm/Sec) | 6.908 | 6.818 | -0.548 | 3.016 |
| Temp (Deg C) | 13.679 | 0.309 | -11.209 | 804.698 |

Table 2. Statistics of the 87V1 velocity components and temperature

| V23 | | | | |
|--------------|-------------|-----------------|-----------------|-----------------|
| | Mean | St. Dev. | Skewness | Kurtosis |
| U (Cm/Sec) | -9.277 | 6.122 | 0.001 | 2.790 |
| V (Cm/Sec) | 5.905 | 5.552 | -0.155 | 2.427 |
| Temp (Deg C) | 14.643 | 0.280 | -19.168 | 1398.333 |
| V25 | | | | |
| | Mean | St. Dev. | Skewness | Kurtosis |
| U (Cm/Sec) | -4.600 | 7.436 | -0.729 | 2.966 |
| V (Cm/Sec) | 1.914 | 4.796 | 0.488 | 3.759 |
| Temp (Deg C) | 13.910 | 0.328 | -8.960 | 345.262 |
| V26 | | | | |
| | Mean | St. Dev. | Skewness | Kurtosis |
| U (Cm/Sec) | -2.255 | 8.428 | 0.111 | 2.509 |
| V (Cm/Sec) | 1.509 | 5.674 | 1.881 | 7.491 |
| Temp (Deg C) | 11.325 | 0.522 | -1.204 | 10.087 |

Table 3. Statistics of the 87V2 velocity components and temperature

Figure 3. Figures 3.1 - 3.24: Histograms of the velocity components and temperature of the basic 5 minute interval data set. Figures 3.25 - 3.32: Time series of the same data.

FIGURE 3.1

V11 EAST

NO. OF POINTS - 4492 BIN SIZE - 2.0 CM/SEC

| BIN | BOUND | FREQ | PERCENT | |
|-----|--------|------|---------|------------|
| 1 | <-40.0 | 0 | 0.00 | |
| 2 | -38.0 | 0 | 0.00 | |
| 3 | -36.0 | 2 | 0.04 | |
| 4 | -34.0 | 5 | 0.11 | |
| 5 | -32.0 | 11 | 0.24 | |
| 6 | -30.0 | 33 | 0.73 | X |
| 7 | -28.0 | 49 | 1.09 | X |
| 8 | -26.0 | 65 | 1.45 | X |
| 9 | -24.0 | 114 | 2.54 | XXX |
| 10 | -22.0 | 149 | 3.32 | XXX |
| 11 | -20.0 | 174 | 3.87 | XXXX |
| 12 | -18.0 | 203 | 4.52 | XXXXX |
| 13 | -16.0 | 243 | 5.41 | XXXXX |
| 14 | -14.0 | 321 | 7.15 | XXXXXXXX |
| 15 | -12.0 | 321 | 7.15 | XXXXXXXX |
| 16 | -10.0 | 416 | 9.26 | XXXXXXXXXX |
| 17 | -8.0 | 418 | 9.31 | XXXXXXXXXX |
| 18 | -6.0 | 340 | 7.57 | XXXXXXXXXX |
| 19 | -4.0 | 315 | 7.01 | XXXXXXXXXX |
| 20 | -2.0 | 346 | 7.70 | XXXXXXXXXX |
| 21 | 0.0 | 296 | 6.59 | XXXXXXXXXX |
| 22 | 2.0 | 228 | 5.08 | XXXXXX |
| 23 | 4.0 | 68 | 1.51 | XX |
| 24 | 6.0 | 112 | 2.49 | XX |
| 25 | 8.0 | 86 | 1.91 | XX |
| 26 | 10.0 | 65 | 1.45 | X |
| 27 | 12.0 | 31 | 0.69 | X |
| 28 | 14.0 | 35 | 0.78 | X |
| 29 | 16.0 | 32 | 0.71 | X |
| 30 | 18.0 | 10 | 0.22 | |
| 31 | 20.0 | 3 | 0.07 | |
| 32 | 22.0 | 1 | 0.02 | |
| 33 | 24.0 | 0 | 0.00 | |
| 34 | 26.0 | 0 | 0.00 | |
| 35 | 28.0 | 0 | 0.00 | |
| 36 | 30.0 | 0 | 0.00 | |
| 37 | 32.0 | 0 | 0.00 | |
| 38 | 34.0 | 0 | 0.00 | |
| 39 | 36.0 | 0 | 0.00 | |
| 40 | 38.0 | 0 | 0.00 | |
| 41 | 40.0 | 0 | 0.00 | |
| 42 | >40.0 | 0 | 0.00 | |

FIGURE 3.2

V11 NORTH

NO. OF POINTS = 4492 BIN SIZE = 2.0 CM/SEC

| BIN | BOUND | FREQ | PERCENT | |
|-----|--------|------|---------|------------------------------|
| 1 | <-40.0 | 0 | 0.00 | |
| 2 | -38.0 | 0 | 0.00 | |
| 3 | -36.0 | 0 | 0.00 | |
| 4 | -34.0 | 0 | 0.00 | |
| 5 | -32.0 | 0 | 0.00 | |
| 6 | -30.0 | 0 | 0.00 | |
| 7 | -28.0 | 0 | 0.00 | |
| 8 | -26.0 | 0 | 0.00 | |
| 9 | -24.0 | 0 | 0.00 | |
| 10 | -22.0 | 1 | 0.02 | |
| 11 | -20.0 | 10 | 0.22 | |
| 12 | -18.0 | 27 | 0.60 | X |
| 13 | -16.0 | 58 | 1.29 | X |
| 14 | -14.0 | 69 | 1.54 | XX |
| 15 | -12.0 | 89 | 1.98 | XX |
| 16 | -10.0 | 112 | 2.49 | XX |
| 17 | -8.0 | 80 | 1.78 | XX |
| 18 | -6.0 | 91 | 2.03 | XX |
| 19 | -4.0 | 126 | 2.80 | XXX |
| 20 | -2.0 | 187 | 4.16 | XXXX |
| 21 | 0.0 | 447 | 9.95 | XXXXXXXXXX |
| 22 | 2.0 | 1181 | 26.29 | XXXXXXXXXXXXXXXXXXXXXXXXXXXX |
| 23 | 4.0 | 530 | 11.80 | XXXXXXXXXXXX |
| 24 | 6.0 | 550 | 12.24 | XXXXXXXXXXXX |
| 25 | 8.0 | 360 | 8.01 | XXXXXXX |
| 26 | 10.0 | 277 | 6.17 | XXXXXX |
| 27 | 12.0 | 170 | 3.78 | XXXX |
| 28 | 14.0 | 102 | 2.27 | XX |
| 29 | 16.0 | 20 | 0.45 | |
| 30 | 18.0 | 5 | 0.11 | |
| 31 | 20.0 | 0 | 0.00 | |
| 32 | 22.0 | 0 | 0.00 | |
| 33 | 24.0 | 0 | 0.00 | |
| 34 | 26.0 | 0 | 0.00 | |
| 35 | 28.0 | 0 | 0.00 | |
| 36 | 30.0 | 0 | 0.00 | |
| 37 | 32.0 | 0 | 0.00 | |
| 38 | 34.0 | 0 | 0.00 | |
| 39 | 36.0 | 0 | 0.00 | |
| 40 | 38.0 | 0 | 0.00 | |
| 41 | 40.0 | 0 | 0.00 | |
| 42 | >40.0 | 0 | 0.00 | |

V11 TEMPERATURE

NO. OF POINTS - 4492 BIN SIZE - .1 DEG C

| BIN | BOUND | FREQ | PERCENT | |
|-----|-------|------|---------|------------|
| 1 | <16.0 | 0 | 0.00 | |
| 2 | 16.1 | 0 | 0.00 | |
| 3 | 16.2 | 0 | 0.00 | |
| 4 | 16.3 | 0 | 0.00 | |
| 5 | 16.4 | 3 | 0.07 | |
| 6 | 16.5 | 10 | 0.22 | |
| 7 | 16.6 | 5 | 0.11 | |
| 8 | 16.7 | 18 | 0.40 | |
| 9 | 16.8 | 41 | 0.91 | X |
| 10 | 16.9 | 58 | 1.29 | X |
| 11 | 17.0 | 69 | 1.54 | XX |
| 12 | 17.1 | 98 | 2.18 | XX |
| 13 | 17.2 | 147 | 3.27 | XXX |
| 14 | 17.3 | 164 | 3.65 | XXXX |
| 15 | 17.4 | 234 | 5.21 | XXXXXX |
| 16 | 17.5 | 186 | 4.14 | XXXX |
| 17 | 17.6 | 183 | 4.07 | XXXX |
| 18 | 17.7 | 204 | 4.54 | XXXXXX |
| 19 | 17.8 | 229 | 5.10 | XXXXXX |
| 20 | 17.9 | 239 | 5.32 | XXXXXX |
| 21 | 18.0 | 168 | 3.74 | XXXX |
| 22 | 18.1 | 183 | 4.07 | XXXX |
| 23 | 18.2 | 357 | 7.95 | XXXXXXXXXX |
| 24 | 18.3 | 315 | 7.01 | XXXXXXXXXX |
| 25 | 18.4 | 234 | 5.21 | XXXXXX |
| 26 | 18.5 | 256 | 5.70 | XXXXXX |
| 27 | 18.6 | 233 | 5.19 | XXXXXX |
| 28 | 18.7 | 252 | 5.61 | XXXXXX |
| 29 | 18.8 | 248 | 5.52 | XXXXXX |
| 30 | 18.9 | 99 | 2.20 | XX |
| 31 | 19.0 | 91 | 2.03 | XX |
| 32 | 19.1 | 52 | 1.16 | X |
| 33 | 19.2 | 24 | 0.53 | X |
| 34 | 19.3 | 22 | 0.49 | |
| 35 | 19.4 | 17 | 0.38 | |
| 36 | 19.5 | 6 | 0.13 | |
| 37 | 19.6 | 3 | 0.07 | |
| 38 | 19.7 | 5 | 0.11 | |
| 39 | 19.8 | 5 | 0.11 | |
| 40 | 19.9 | 1 | 0.02 | |
| 41 | 20.0 | 5 | 0.11 | |
| 42 | >20.0 | 28 | 0.62 | X |

FIGURE 3.4

V12 EAST

NO. OF POINTS - 4492 BIN SIZE - 2.0 CM/SEC

| BIN | BOUND | FREQ | PERCENT | |
|-----|--------|------|---------|--------------------|
| 1 | <-40.0 | 0 | 0.00 | |
| 2 | -38.0 | 0 | 0.00 | |
| 3 | -36.0 | 0 | 0.00 | |
| 4 | -34.0 | 0 | 0.00 | |
| 5 | -32.0 | 0 | 0.00 | |
| 6 | -30.0 | 0 | 0.00 | |
| 7 | -28.0 | 8 | 0.18 | |
| 8 | -26.0 | 10 | 0.22 | |
| 9 | -24.0 | 86 | 1.91 | XX |
| 10 | -22.0 | 131 | 2.92 | XXX |
| 11 | -20.0 | 171 | 3.81 | XXXX |
| 12 | -18.0 | 260 | 5.79 | XXXXXX |
| 13 | -16.0 | 343 | 7.64 | XXXXXXXX |
| 14 | -14.0 | 465 | 10.35 | XXXXXXXXXX |
| 15 | -12.0 | 646 | 14.38 | XXXXXXXXXXXXXX |
| 16 | -10.0 | 724 | 16.12 | XXXXXXXXXXXXXXXXXX |
| 17 | -8.0 | 616 | 13.71 | XXXXXXXXXXXXXXXXXX |
| 18 | -6.0 | 405 | 9.02 | XXXXXXXXXX |
| 19 | -4.0 | 249 | 5.54 | XXXXXX |
| 20 | -2.0 | 107 | 2.38 | XX |
| 21 | 0.0 | 61 | 1.36 | X |
| 22 | 2.0 | 46 | 1.02 | X |
| 23 | 4.0 | 43 | 0.96 | X |
| 24 | 6.0 | 46 | 1.02 | X |
| 25 | 8.0 | 38 | 0.85 | X |
| 26 | 10.0 | 23 | 0.51 | X |
| 27 | 12.0 | 10 | 0.22 | |
| 28 | 14.0 | 4 | 0.09 | |
| 29 | 16.0 | 0 | 0.00 | |
| 30 | 18.0 | 0 | 0.00 | |
| 31 | 20.0 | 0 | 0.00 | |
| 32 | 22.0 | 0 | 0.00 | |
| 33 | 24.0 | 0 | 0.00 | |
| 34 | 26.0 | 0 | 0.00 | |
| 35 | 28.0 | 0 | 0.00 | |
| 36 | 30.0 | 0 | 0.00 | |
| 37 | 32.0 | 0 | 0.00 | |
| 38 | 34.0 | 0 | 0.00 | |
| 39 | 36.0 | 0 | 0.00 | |
| 40 | 38.0 | 0 | 0.00 | |
| 41 | 40.0 | 0 | 0.00 | |
| 42 | >40.0 | 0 | 0.00 | |

FIGURE 3.5

V12 NORTH

NO. OF POINTS = 4492 BIN SIZE = 2.0 CM/SEC

| BIN | BOUND | FREQ | PERCENT | |
|-----|--------|------|---------|--------------|
| 1 | <-40.0 | 0 | 0.00 | |
| 2 | -38.0 | 0 | 0.00 | |
| 3 | -36.0 | 0 | 0.00 | |
| 4 | -34.0 | 0 | 0.00 | |
| 5 | -32.0 | 0 | 0.00 | |
| 6 | -30.0 | 0 | 0.00 | |
| 7 | -28.0 | 0 | 0.00 | |
| 8 | -26.0 | 0 | 0.00 | |
| 9 | -24.0 | 0 | 0.00 | |
| 10 | -22.0 | 0 | 0.00 | |
| 11 | -20.0 | 3 | 0.07 | |
| 12 | -18.0 | 9 | 0.20 | |
| 13 | -16.0 | 10 | 0.22 | |
| 14 | -14.0 | 16 | 0.36 | |
| 15 | -12.0 | 24 | 0.53 | X |
| 16 | -10.0 | 46 | 1.02 | X |
| 17 | -8.0 | 82 | 1.83 | XX |
| 18 | -6.0 | 141 | 3.14 | XXX |
| 19 | -4.0 | 144 | 3.21 | XXX |
| 20 | -2.0 | 253 | 5.63 | XXXXXX |
| 21 | 0.0 | 324 | 7.21 | XXXXXXXX |
| 22 | 2.0 | 368 | 8.19 | XXXXXXXX |
| 23 | 4.0 | 435 | 9.68 | XXXXXXXXXX |
| 24 | 6.0 | 527 | 11.73 | XXXXXXXXXXXX |
| 25 | 8.0 | 510 | 11.35 | XXXXXXXXXXXX |
| 26 | 10.0 | 441 | 9.82 | XXXXXXXXXX |
| 27 | 12.0 | 470 | 10.46 | XXXXXXXXXX |
| 28 | 14.0 | 356 | 7.93 | XXXXXXXX |
| 29 | 16.0 | 221 | 4.92 | XXXXX |
| 30 | 18.0 | 68 | 1.51 | XX |
| 31 | 20.0 | 21 | 0.47 | |
| 32 | 22.0 | 11 | 0.24 | |
| 33 | 24.0 | 6 | 0.13 | |
| 34 | 26.0 | 3 | 0.07 | |
| 35 | 28.0 | 2 | 0.04 | |
| 36 | 30.0 | 1 | 0.02 | |
| 37 | 32.0 | 0 | 0.00 | |
| 38 | 34.0 | 0 | 0.00 | |
| 39 | 36.0 | 0 | 0.00 | |
| 40 | 38.0 | 0 | 0.00 | |
| 41 | 40.0 | 0 | 0.00 | |
| 42 | >40.0 | 0 | 0.00 | |

FIGURE 3.6

V12 TEMPERATURE

NO. OF POINTS = 4492 BIN SIZE = .1 DEG C

| BIN | BOUND | FREQ | PERCENT | |
|-----|-------|------|---------|--------------------|
| 1 | <14.0 | 0 | 0.00 | |
| 2 | 14.1 | 0 | 0.00 | |
| 3 | 14.2 | 0 | 0.00 | |
| 4 | 14.3 | 0 | 0.00 | |
| 5 | 14.4 | 0 | 0.00 | |
| 6 | 14.5 | 0 | 0.00 | |
| 7 | 14.6 | 0 | 0.00 | |
| 8 | 14.7 | 0 | 0.00 | |
| 9 | 14.8 | 13 | 0.29 | |
| 10 | 14.9 | 26 | 0.58 | X |
| 11 | 15.0 | 89 | 1.98 | XX |
| 12 | 15.1 | 218 | 4.85 | XXXXXX |
| 13 | 15.2 | 372 | 8.28 | XXXXXXXXXX |
| 14 | 15.3 | 501 | 11.15 | XXXXXXXXXXXX |
| 15 | 15.4 | 739 | 16.45 | XXXXXXXXXXXXXXXXXX |
| 16 | 15.5 | 647 | 14.40 | XXXXXXXXXXXXXXXXXX |
| 17 | 15.6 | 613 | 13.65 | XXXXXXXXXXXXXXXXXX |
| 18 | 15.7 | 500 | 11.13 | XXXXXXXXXXXX |
| 19 | 15.8 | 392 | 8.73 | XXXXXXXXXX |
| 20 | 15.9 | 149 | 3.32 | XXX |
| 21 | 16.0 | 78 | 1.74 | XX |
| 22 | 16.1 | 38 | 0.85 | X |
| 23 | 16.2 | 35 | 0.78 | X |
| 24 | 16.3 | 37 | 0.82 | X |
| 25 | 16.4 | 25 | 0.56 | X |
| 26 | 16.5 | 13 | 0.29 | |
| 27 | 16.6 | 7 | 0.16 | |
| 28 | 16.7 | 0 | 0.00 | |
| 29 | 16.8 | 0 | 0.00 | |
| 30 | 16.9 | 0 | 0.00 | |
| 31 | 17.0 | 0 | 0.00 | |
| 32 | 17.1 | 0 | 0.00 | |
| 33 | 17.2 | 0 | 0.00 | |
| 34 | 17.3 | 0 | 0.00 | |
| 35 | 17.4 | 0 | 0.00 | |
| 36 | 17.5 | 0 | 0.00 | |
| 37 | 17.6 | 0 | 0.00 | |
| 38 | 17.7 | 0 | 0.00 | |
| 39 | 17.8 | 0 | 0.00 | |
| 40 | 17.9 | 0 | 0.00 | |
| 41 | 18.0 | 0 | 0.00 | |
| 42 | >18.0 | 0 | 0.00 | |

FIGURE 3.7

V13 EAST

NO. OF POINTS = 4493 BIN SIZE = 2.0 CM/SEC

| BIN | BOUND | FREQ | PERCENT | |
|-----|--------|------|---------|--------------|
| 1 | <-40.0 | 0 | 0.00 | |
| 2 | -38.0 | 0 | 0.00 | |
| 3 | -36.0 | 0 | 0.00 | |
| 4 | -34.0 | 0 | 0.00 | |
| 5 | -32.0 | 0 | 0.00 | |
| 6 | -30.0 | 2 | 0.04 | |
| 7 | -28.0 | 11 | 0.24 | |
| 8 | -26.0 | 16 | 0.36 | |
| 9 | -24.0 | 31 | 0.69 | X |
| 10 | -22.0 | 69 | 1.54 | XX |
| 11 | -20.0 | 143 | 3.18 | XXX |
| 12 | -18.0 | 215 | 4.79 | XXXXX |
| 13 | -16.0 | 271 | 6.03 | XXXXXX |
| 14 | -14.0 | 384 | 8.55 | XXXXXXXXXX |
| 15 | -12.0 | 452 | 10.06 | XXXXXXXXXXXX |
| 16 | -10.0 | 506 | 11.26 | XXXXXXXXXXXX |
| 17 | -8.0 | 498 | 11.08 | XXXXXXXXXXXX |
| 18 | -6.0 | 541 | 12.04 | XXXXXXXXXXXX |
| 19 | -4.0 | 488 | 10.86 | XXXXXXXXXXXX |
| 20 | -2.0 | 289 | 6.43 | XXXXXX |
| 21 | 0.0 | 206 | 4.58 | XXXXXX |
| 22 | 2.0 | 117 | 2.60 | XXX |
| 23 | 4.0 | 91 | 2.03 | XX |
| 24 | 6.0 | 73 | 1.62 | XX |
| 25 | 8.0 | 53 | 1.18 | X |
| 26 | 10.0 | 26 | 0.58 | X |
| 27 | 12.0 | 10 | 0.22 | |
| 28 | 14.0 | 1 | 0.02 | |
| 29 | 16.0 | 0 | 0.00 | |
| 30 | 18.0 | 0 | 0.00 | |
| 31 | 20.0 | 0 | 0.00 | |
| 32 | 22.0 | 0 | 0.00 | |
| 33 | 24.0 | 0 | 0.00 | |
| 34 | 26.0 | 0 | 0.00 | |
| 35 | 28.0 | 0 | 0.00 | |
| 36 | 30.0 | 0 | 0.00 | |
| 37 | 32.0 | 0 | 0.00 | |
| 38 | 34.0 | 0 | 0.00 | |
| 39 | 36.0 | 0 | 0.00 | |
| 40 | 38.0 | 0 | 0.00 | |
| 41 | 40.0 | 0 | 0.00 | |
| 42 | >40.0 | 0 | 0.00 | |

FIGURE 3.8

V13 NORTH

NO. OF POINTS = 4493 BIN SIZE = 2.0 CM/SEC

| BIN | BOUND | FREQ | PERCENT | |
|-----|--------|------|---------|---------------|
| 1 | <-40.0 | 0 | 0.00 | |
| 2 | -38.0 | 0 | 0.00 | |
| 3 | -36.0 | 0 | 0.00 | |
| 4 | -34.0 | 0 | 0.00 | |
| 5 | -32.0 | 0 | 0.00 | |
| 6 | -30.0 | 0 | 0.00 | |
| 7 | -28.0 | 0 | 0.00 | |
| 8 | -26.0 | 0 | 0.00 | |
| 9 | -24.0 | 0 | 0.00 | |
| 10 | -22.0 | 0 | 0.00 | |
| 11 | -20.0 | 0 | 0.00 | |
| 12 | -18.0 | 0 | 0.00 | |
| 13 | -16.0 | 2 | 0.04 | |
| 14 | -14.0 | 5 | 0.11 | |
| 15 | -12.0 | 17 | 0.38 | |
| 16 | -10.0 | 22 | 0.49 | |
| 17 | -8.0 | 74 | 1.65 | XX |
| 18 | -6.0 | 116 | 2.58 | XXX |
| 19 | -4.0 | 157 | 3.49 | XXX |
| 20 | -2.0 | 161 | 3.58 | XXXX |
| 21 | 0.0 | 203 | 4.52 | XXXXX |
| 22 | 2.0 | 321 | 7.14 | XXXXXXXX |
| 23 | 4.0 | 371 | 8.26 | XXXXXXXXX |
| 24 | 6.0 | 483 | 10.75 | XXXXXXXXXX |
| 25 | 8.0 | 553 | 12.31 | XXXXXXXXXXXX |
| 26 | 10.0 | 602 | 13.40 | XXXXXXXXXXXXX |
| 27 | 12.0 | 538 | 11.97 | XXXXXXXXXXXXX |
| 28 | 14.0 | 442 | 9.84 | XXXXXXXXXXXX |
| 29 | 16.0 | 260 | 5.79 | XXXXXX |
| 30 | 18.0 | 102 | 2.27 | XX |
| 31 | 20.0 | 55 | 1.22 | X |
| 32 | 22.0 | 9 | 0.20 | |
| 33 | 24.0 | 0 | 0.00 | |
| 34 | 26.0 | 0 | 0.00 | |
| 35 | 28.0 | 0 | 0.00 | |
| 36 | 30.0 | 0 | 0.00 | |
| 37 | 32.0 | 0 | 0.00 | |
| 38 | 34.0 | 0 | 0.00 | |
| 39 | 36.0 | 0 | 0.00 | |
| 40 | 38.0 | 0 | 0.00 | |
| 41 | 40.0 | 0 | 0.00 | |
| 42 | >40.0 | 0 | 0.00 | |

FIGURE 3.9

V13 TEMPERATURE

NO. OF POINTS = 4493 BIN SIZE = .1 DEG C

| BIN | BOUND | FREQ | PERCENT | |
|-----|-------|------|---------|------------------|
| 1 | <13.0 | 0 | 0.00 | |
| 2 | 13.1 | 0 | 0.00 | |
| 3 | 13.2 | 0 | 0.00 | |
| 4 | 13.3 | 0 | 0.00 | |
| 5 | 13.4 | 0 | 0.00 | |
| 6 | 13.5 | 0 | 0.00 | |
| 7 | 13.6 | 0 | 0.00 | |
| 8 | 13.7 | 0 | 0.00 | |
| 9 | 13.8 | 0 | 0.00 | |
| 10 | 13.9 | 2 | 0.04 | |
| 11 | 14.0 | 8 | 0.18 | |
| 12 | 14.1 | 20 | 0.45 | |
| 13 | 14.2 | 60 | 1.34 | X |
| 14 | 14.3 | 152 | 3.38 | XXX |
| 15 | 14.4 | 304 | 6.77 | XXXXXXXX |
| 16 | 14.5 | 364 | 8.10 | XXXXXXXXXX |
| 17 | 14.6 | 504 | 11.22 | XXXXXXXXXXXX |
| 18 | 14.7 | 534 | 11.89 | XXXXXXXXXXXX |
| 19 | 14.8 | 515 | 11.46 | XXXXXXXXXXXX |
| 20 | 14.9 | 638 | 14.20 | XXXXXXXXXXXXXXXX |
| 21 | 15.0 | 581 | 12.93 | XXXXXXXXXXXXXXXX |
| 22 | 15.1 | 411 | 9.15 | XXXXXXXXXXXX |
| 23 | 15.2 | 213 | 4.74 | XXXXXX |
| 24 | 15.3 | 127 | 2.83 | XXX |
| 25 | 15.4 | 47 | 1.05 | X |
| 26 | 15.5 | 9 | 0.20 | |
| 27 | 15.6 | 4 | 0.09 | |
| 28 | 15.7 | 0 | 0.00 | |
| 29 | 15.8 | 0 | 0.00 | |
| 30 | 15.9 | 0 | 0.00 | |
| 31 | 16.0 | 0 | 0.00 | |
| 32 | 16.1 | 0 | 0.00 | |
| 33 | 16.2 | 0 | 0.00 | |
| 34 | 16.3 | 0 | 0.00 | |
| 35 | 16.4 | 0 | 0.00 | |
| 36 | 16.5 | 0 | 0.00 | |
| 37 | 16.6 | 0 | 0.00 | |
| 38 | 16.7 | 0 | 0.00 | |
| 39 | 16.8 | 0 | 0.00 | |
| 40 | 16.9 | 0 | 0.00 | |
| 41 | 17.0 | 0 | 0.00 | |
| 42 | >17.0 | 0 | 0.00 | |

FIGURE 3.10

V14 EAST

NO. OF POINTS = 4493 BIN SIZE = 2.0 CM/SEC

| BIN | BOUND | FREQ | PERCENT | |
|-----|--------|------|---------|--------------|
| 1 | <-40.0 | 0 | 0.00 | |
| 2 | -38.0 | 0 | 0.00 | |
| 3 | -36.0 | 0 | 0.00 | |
| 4 | -34.0 | 0 | 0.00 | |
| 5 | -32.0 | 4 | 0.09 | |
| 6 | -30.0 | 18 | 0.40 | |
| 7 | -28.0 | 23 | 0.51 | X |
| 8 | -26.0 | 33 | 0.73 | X |
| 9 | -24.0 | 109 | 2.43 | XX |
| 10 | -22.0 | 187 | 4.16 | XXXX |
| 11 | -20.0 | 239 | 5.32 | XXXXX |
| 12 | -18.0 | 247 | 5.50 | XXXXX |
| 13 | -16.0 | 341 | 7.59 | XXXXXXXX |
| 14 | -14.0 | 354 | 7.88 | XXXXXXXX |
| 15 | -12.0 | 446 | 9.93 | XXXXXXXXXX |
| 16 | -10.0 | 490 | 10.91 | XXXXXXXXXXXX |
| 17 | -8.0 | 465 | 10.35 | XXXXXXXXXXXX |
| 18 | -6.0 | 384 | 8.55 | XXXXXXXXXX |
| 19 | -4.0 | 319 | 7.10 | XXXXXXX |
| 20 | -2.0 | 246 | 5.48 | XXXXXX |
| 21 | 0.0 | 150 | 3.34 | XXX |
| 22 | 2.0 | 153 | 3.41 | XXX |
| 23 | 4.0 | 111 | 2.47 | XX |
| 24 | 6.0 | 90 | 2.00 | XX |
| 25 | 8.0 | 51 | 1.14 | X |
| 26 | 10.0 | 19 | 0.42 | |
| 27 | 12.0 | 9 | 0.20 | |
| 28 | 14.0 | 5 | 0.11 | |
| 29 | 16.0 | 0 | 0.00 | |
| 30 | 18.0 | 0 | 0.00 | |
| 31 | 20.0 | 0 | 0.00 | |
| 32 | 22.0 | 0 | 0.00 | |
| 33 | 24.0 | 0 | 0.00 | |
| 34 | 26.0 | 0 | 0.00 | |
| 35 | 28.0 | 0 | 0.00 | |
| 36 | 30.0 | 0 | 0.00 | |
| 37 | 32.0 | 0 | 0.00 | |
| 38 | 34.0 | 0 | 0.00 | |
| 39 | 36.0 | 0 | 0.00 | |
| 40 | 38.0 | 0 | 0.00 | |
| 41 | 40.0 | 0 | 0.00 | |
| 42 | >40.0 | 0 | 0.00 | |

FIGURE 3.11

V14 NORTH

NO. OF POINTS = 4493 BIN SIZE = 2.0 CM/SEC

| BIN | BOUND | FREQ | PERCENT | |
|-----|--------|------|---------|--------------|
| 1 | <-40.0 | 0 | 0.00 | |
| 2 | -38.0 | 0 | 0.00 | |
| 3 | -36.0 | 0 | 0.00 | |
| 4 | -34.0 | 0 | 0.00 | |
| 5 | -32.0 | 0 | 0.00 | |
| 6 | -30.0 | 0 | 0.00 | |
| 7 | -28.0 | 0 | 0.00 | |
| 8 | -26.0 | 0 | 0.00 | |
| 9 | -24.0 | 0 | 0.00 | |
| 10 | -22.0 | 0 | 0.00 | |
| 11 | -20.0 | 0 | 0.00 | |
| 12 | -18.0 | 0 | 0.00 | |
| 13 | -16.0 | 0 | 0.00 | |
| 14 | -14.0 | 0 | 0.00 | |
| 15 | -12.0 | 6 | 0.13 | |
| 16 | -10.0 | 21 | 0.47 | |
| 17 | -8.0 | 36 | 0.80 | X |
| 18 | -6.0 | 82 | 1.83 | XX |
| 19 | -4.0 | 162 | 3.61 | XXXX |
| 20 | -2.0 | 194 | 4.32 | XXXX |
| 21 | 0.0 | 161 | 3.58 | XXXX |
| 22 | 2.0 | 288 | 6.41 | XXXXXX |
| 23 | 4.0 | 349 | 7.77 | XXXXXXXX |
| 24 | 6.0 | 425 | 9.46 | XXXXXXXXXX |
| 25 | 8.0 | 462 | 10.28 | XXXXXXXXXX |
| 26 | 10.0 | 532 | 11.84 | XXXXXXXXXXXX |
| 27 | 12.0 | 553 | 12.31 | XXXXXXXXXXXX |
| 28 | 14.0 | 476 | 10.59 | XXXXXXXXXXXX |
| 29 | 16.0 | 372 | 8.28 | XXXXXXXXXX |
| 30 | 18.0 | 203 | 4.52 | XXXXXX |
| 31 | 20.0 | 101 | 2.25 | XX |
| 32 | 22.0 | 35 | 0.78 | X |
| 33 | 24.0 | 21 | 0.47 | |
| 34 | 26.0 | 8 | 0.18 | |
| 35 | 28.0 | 5 | 0.11 | |
| 36 | 30.0 | 1 | 0.02 | |
| 37 | 32.0 | 0 | 0.00 | |
| 38 | 34.0 | 0 | 0.00 | |
| 39 | 36.0 | 0 | 0.00 | |
| 40 | 38.0 | 0 | 0.00 | |
| 41 | 40.0 | 0 | 0.00 | |
| 42 | >40.0 | 0 | 0.00 | |

FIGURE 3.12

V14 TEMPERATURE

NO. OF POINTS = 4493 BIN SIZE = .1 DEG C

| BIN | BOUND | FREQ | PERCENT | |
|-----|-------|------|---------|------------------|
| 1 | <12.0 | 0 | 0.00 | |
| 2 | 12.1 | 0 | 0.00 | |
| 3 | 12.2 | 0 | 0.00 | |
| 4 | 12.3 | 0 | 0.00 | |
| 5 | 12.4 | 0 | 0.00 | |
| 6 | 12.5 | 0 | 0.00 | |
| 7 | 12.6 | 0 | 0.00 | |
| 8 | 12.7 | 0 | 0.00 | |
| 9 | 12.8 | 0 | 0.00 | |
| 10 | 12.9 | 0 | 0.00 | |
| 11 | 13.0 | 0 | 0.00 | |
| 12 | 13.1 | 0 | 0.00 | |
| 13 | 13.2 | 1 | 0.02 | |
| 14 | 13.3 | 8 | 0.18 | |
| 15 | 13.4 | 55 | 1.22 | X |
| 16 | 13.5 | 99 | 2.20 | XX |
| 17 | 13.6 | 182 | 4.05 | XXXX |
| 18 | 13.7 | 349 | 7.77 | XXXXXXXX |
| 19 | 13.8 | 506 | 11.26 | XXXXXXXXXXXX |
| 20 | 13.9 | 517 | 11.51 | XXXXXXXXXXXX |
| 21 | 14.0 | 559 | 12.44 | XXXXXXXXXXXX |
| 22 | 14.1 | 667 | 14.85 | XXXXXXXXXXXXXXXX |
| 23 | 14.2 | 559 | 12.44 | XXXXXXXXXXXX |
| 24 | 14.3 | 394 | 8.77 | XXXXXXXXXX |
| 25 | 14.4 | 286 | 6.37 | XXXXXX |
| 26 | 14.5 | 134 | 2.98 | XXX |
| 27 | 14.6 | 120 | 2.67 | XXX |
| 28 | 14.7 | 57 | 1.27 | X |
| 29 | 14.8 | 0 | 0.00 | |
| 30 | 14.9 | 0 | 0.00 | |
| 31 | 15.0 | 0 | 0.00 | |
| 32 | 15.1 | 0 | 0.00 | |
| 33 | 15.2 | 0 | 0.00 | |
| 34 | 15.3 | 0 | 0.00 | |
| 35 | 15.4 | 0 | 0.00 | |
| 36 | 15.5 | 0 | 0.00 | |
| 37 | 15.6 | 0 | 0.00 | |
| 38 | 15.7 | 0 | 0.00 | |
| 39 | 15.8 | 0 | 0.00 | |
| 40 | 15.9 | 0 | 0.00 | |
| 41 | 16.0 | 0 | 0.00 | |
| 42 | >16.0 | 0 | 0.00 | |

FIGURE 3.13

V15 EAST

NO. OF POINTS = 4492 BIN SIZE = 2.0 CM/SEC

| BIN | BOUND | FREQ | PERCENT | |
|-----|--------|------|---------|--------------|
| 1 | <-40.0 | 0 | 0.00 | |
| 2 | -38.0 | 0 | 0.00 | |
| 3 | -36.0 | 0 | 0.00 | |
| 4 | -34.0 | 0 | 0.00 | |
| 5 | -32.0 | 0 | 0.00 | |
| 6 | -30.0 | 10 | 0.22 | |
| 7 | -28.0 | 30 | 0.67 | X |
| 8 | -26.0 | 34 | 0.76 | X |
| 9 | -24.0 | 104 | 2.32 | XX |
| 10 | -22.0 | 182 | 4.05 | XXXX |
| 11 | -20.0 | 208 | 4.63 | XXXXX |
| 12 | -18.0 | 235 | 5.23 | XXXXX |
| 13 | -16.0 | 315 | 7.01 | XXXXXXXX |
| 14 | -14.0 | 345 | 7.68 | XXXXXXXXX |
| 15 | -12.0 | 367 | 8.17 | XXXXXXXXX |
| 16 | -10.0 | 442 | 9.84 | XXXXXXXXXX |
| 17 | -8.0 | 494 | 11.00 | XXXXXXXXXXXX |
| 18 | -6.0 | 453 | 10.08 | XXXXXXXXXXXX |
| 19 | -4.0 | 383 | 8.53 | XXXXXXXXXX |
| 20 | -2.0 | 256 | 5.70 | XXXXXX |
| 21 | 0.0 | 210 | 4.67 | XXXXXX |
| 22 | 2.0 | 155 | 3.45 | XXX |
| 23 | 4.0 | 102 | 2.27 | XX |
| 24 | 6.0 | 70 | 1.56 | XX |
| 25 | 8.0 | 43 | 0.96 | X |
| 26 | 10.0 | 24 | 0.53 | X |
| 27 | 12.0 | 12 | 0.27 | |
| 28 | 14.0 | 6 | 0.13 | |
| 29 | 16.0 | 6 | 0.13 | |
| 30 | 18.0 | 1 | 0.02 | |
| 31 | 20.0 | 0 | 0.00 | |
| 32 | 22.0 | 0 | 0.00 | |
| 33 | 24.0 | 0 | 0.00 | |
| 34 | 26.0 | 0 | 0.00 | |
| 35 | 28.0 | 0 | 0.00 | |
| 36 | 30.0 | 0 | 0.00 | |
| 37 | 32.0 | 0 | 0.00 | |
| 38 | 34.0 | 5 | 0.11 | |
| 39 | 36.0 | 0 | 0.00 | |
| 40 | 38.0 | 0 | 0.00 | |
| 41 | 40.0 | 0 | 0.00 | |
| 42 | >40.0 | 0 | 0.00 | |

FIGURE 3.14

V15 NORTH

NO. OF POINTS = 4492 BIN SIZE = 2.0 CM/SEC

| BIN | BOUND | FREQ | PERCENT | |
|-----|--------|------|---------|--------------|
| 1 | <-40.0 | 0 | 0.00 | |
| 2 | -38.0 | 0 | 0.00 | |
| 3 | -36.0 | 0 | 0.00 | |
| 4 | -34.0 | 0 | 0.00 | |
| 5 | -32.0 | 0 | 0.00 | |
| 6 | -30.0 | 0 | 0.00 | |
| 7 | -28.0 | 0 | 0.00 | |
| 8 | -26.0 | 0 | 0.00 | |
| 9 | -24.0 | 0 | 0.00 | |
| 10 | -22.0 | 1 | 0.02 | |
| 11 | -20.0 | 1 | 0.02 | |
| 12 | -18.0 | 0 | 0.00 | |
| 13 | -16.0 | 0 | 0.00 | |
| 14 | -14.0 | 1 | 0.02 | |
| 15 | -12.0 | 10 | 0.22 | |
| 16 | -10.0 | 51 | 1.14 | X |
| 17 | -8.0 | 78 | 1.74 | XX |
| 18 | -6.0 | 105 | 2.34 | XX |
| 19 | -4.0 | 114 | 2.54 | XXX |
| 20 | -2.0 | 145 | 3.23 | XXX |
| 21 | 0.0 | 217 | 4.83 | XXXXX |
| 22 | 2.0 | 277 | 6.17 | XXXXXX |
| 23 | 4.0 | 379 | 8.44 | XXXXXXXX |
| 24 | 6.0 | 431 | 9.59 | XXXXXXXXXX |
| 25 | 8.0 | 453 | 10.08 | XXXXXXXXXX |
| 26 | 10.0 | 552 | 12.29 | XXXXXXXXXXXX |
| 27 | 12.0 | 563 | 12.53 | XXXXXXXXXXXX |
| 28 | 14.0 | 519 | 11.55 | XXXXXXXXXXXX |
| 29 | 16.0 | 328 | 7.30 | XXXXXXX |
| 30 | 18.0 | 168 | 3.74 | XXXX |
| 31 | 20.0 | 58 | 1.29 | X |
| 32 | 22.0 | 30 | 0.67 | X |
| 33 | 24.0 | 9 | 0.20 | |
| 34 | 26.0 | 0 | 0.00 | |
| 35 | 28.0 | 1 | 0.02 | |
| 36 | 30.0 | 0 | 0.00 | |
| 37 | 32.0 | 0 | 0.00 | |
| 38 | 34.0 | 1 | 0.02 | |
| 39 | 36.0 | 0 | 0.00 | |
| 40 | 38.0 | 0 | 0.00 | |
| 41 | 40.0 | 0 | 0.00 | |
| 42 | >40.0 | 0 | 0.00 | |

FIGURE 3.15

V15 TEMPERATURE

NO. OF POINTS = 4492 BIN SIZE = .1 DEG C

| BIN | BOUND | FREQ | PERCENT | |
|-----|-------|------|---------|----------------------|
| 1 | <12.0 | 0 | 0.00 | |
| 2 | 12.1 | 0 | 0.00 | |
| 3 | 12.2 | 0 | 0.00 | |
| 4 | 12.3 | 0 | 0.00 | |
| 5 | 12.4 | 0 | 0.00 | |
| 6 | 12.5 | 0 | 0.00 | |
| 7 | 12.6 | 0 | 0.00 | |
| 8 | 12.7 | 0 | 0.00 | |
| 9 | 12.8 | 0 | 0.00 | |
| 10 | 12.9 | 0 | 0.00 | |
| 11 | 13.0 | 15 | 0.33 | |
| 12 | 13.1 | 59 | 1.31 | X |
| 13 | 13.2 | 88 | 1.96 | XX |
| 14 | 13.3 | 203 | 4.52 | XXXXXX |
| 15 | 13.4 | 307 | 6.83 | XXXXXXXX |
| 16 | 13.5 | 483 | 10.75 | XXXXXXXXXXXXXX |
| 17 | 13.6 | 696 | 15.49 | XXXXXXXXXXXXXXXXXXXX |
| 18 | 13.7 | 548 | 12.20 | XXXXXXXXXXXXXXXXXX |
| 19 | 13.8 | 502 | 11.18 | XXXXXXXXXXXXXX |
| 20 | 13.9 | 596 | 13.27 | XXXXXXXXXXXXXXXXXXXX |
| 21 | 14.0 | 366 | 8.15 | XXXXXXXXXX |
| 22 | 14.1 | 290 | 6.46 | XXXXXXX |
| 23 | 14.2 | 228 | 5.08 | XXXXXX |
| 24 | 14.3 | 76 | 1.69 | XX |
| 25 | 14.4 | 28 | 0.62 | X |
| 26 | 14.5 | 7 | 0.16 | |
| 27 | 14.6 | 0 | 0.00 | |
| 28 | 14.7 | 0 | 0.00 | |
| 29 | 14.8 | 0 | 0.00 | |
| 30 | 14.9 | 0 | 0.00 | |
| 31 | 15.0 | 0 | 0.00 | |
| 32 | 15.1 | 0 | 0.00 | |
| 33 | 15.2 | 0 | 0.00 | |
| 34 | 15.3 | 0 | 0.00 | |
| 35 | 15.4 | 0 | 0.00 | |
| 36 | 15.5 | 0 | 0.00 | |
| 37 | 15.6 | 0 | 0.00 | |
| 38 | 15.7 | 0 | 0.00 | |
| 39 | 15.8 | 0 | 0.00 | |
| 40 | 15.9 | 0 | 0.00 | |
| 41 | 16.0 | 0 | 0.00 | |
| 42 | >16.0 | 0 | 0.00 | |

FIGURE 3.16

V23 EAST

NO. OF POINTS = 4302 BIN SIZE = 2.0 CM/SEC

| BIN | BOUND | FREQ | PERCENT | |
|-----|--------|------|---------|----------------|
| 1 | <-40.0 | 0 | 0.00 | |
| 2 | -38.0 | 0 | 0.00 | |
| 3 | -36.0 | 0 | 0.00 | |
| 4 | -34.0 | 0 | 0.00 | |
| 5 | -32.0 | 0 | 0.00 | |
| 6 | -30.0 | 0 | 0.00 | |
| 7 | -28.0 | 0 | 0.00 | |
| 8 | -26.0 | 3 | 0.07 | |
| 9 | -24.0 | 37 | 0.86 | X |
| 10 | -22.0 | 59 | 1.37 | X |
| 11 | -20.0 | 71 | 1.65 | XX |
| 12 | -18.0 | 168 | 3.91 | XXXX |
| 13 | -16.0 | 228 | 5.30 | XXXXX |
| 14 | -14.0 | 383 | 8.90 | XXXXXXXXXX |
| 15 | -12.0 | 543 | 12.62 | XXXXXXXXXXXXXX |
| 16 | -10.0 | 491 | 11.41 | XXXXXXXXXXXXXX |
| 17 | -8.0 | 507 | 11.79 | XXXXXXXXXXXXXX |
| 18 | -6.0 | 529 | 12.30 | XXXXXXXXXXXXXX |
| 19 | -4.0 | 411 | 9.55 | XXXXXXXXXXXXXX |
| 20 | -2.0 | 322 | 7.48 | XXXXXXX |
| 21 | 0.0 | 281 | 6.53 | XXXXXXX |
| 22 | 2.0 | 137 | 3.18 | XXX |
| 23 | 4.0 | 65 | 1.51 | XX |
| 24 | 6.0 | 49 | 1.14 | X |
| 25 | 8.0 | 14 | 0.33 | |
| 26 | 10.0 | 3 | 0.07 | |
| 27 | 12.0 | 1 | 0.02 | |
| 28 | 14.0 | 0 | 0.00 | |
| 29 | 16.0 | 0 | 0.00 | |
| 30 | 18.0 | 0 | 0.00 | |
| 31 | 20.0 | 0 | 0.00 | |
| 32 | 22.0 | 0 | 0.00 | |
| 33 | 24.0 | 0 | 0.00 | |
| 34 | 26.0 | 0 | 0.00 | |
| 35 | 28.0 | 0 | 0.00 | |
| 36 | 30.0 | 0 | 0.00 | |
| 37 | 32.0 | 0 | 0.00 | |
| 38 | 34.0 | 0 | 0.00 | |
| 39 | 36.0 | 0 | 0.00 | |
| 40 | 38.0 | 0 | 0.00 | |
| 41 | 40.0 | 0 | 0.00 | |
| 42 | >40.0 | 0 | 0.00 | |

FIGURE 3.17

V23 NORTH

NO. OF POINTS = 4302 BIN SIZE = 2.0 CM/SEC

| BIN | BOUND | FREQ | PERCENT | |
|-----|--------|------|---------|------------------|
| 1 | <-40.0 | 0 | 0.00 | |
| 2 | -38.0 | 0 | 0.00 | |
| 3 | -36.0 | 0 | 0.00 | |
| 4 | -34.0 | 0 | 0.00 | |
| 5 | -32.0 | 0 | 0.00 | |
| 6 | -30.0 | 0 | 0.00 | |
| 7 | -28.0 | 0 | 0.00 | |
| 8 | -26.0 | 0 | 0.00 | |
| 9 | -24.0 | 0 | 0.00 | |
| 10 | -22.0 | 0 | 0.00 | |
| 11 | -20.0 | 0 | 0.00 | |
| 12 | -18.0 | 0 | 0.00 | |
| 13 | -16.0 | 0 | 0.00 | |
| 14 | -14.0 | 0 | 0.00 | |
| 15 | -12.0 | 0 | 0.00 | |
| 16 | -10.0 | 1 | 0.02 | |
| 17 | -8.0 | 8 | 0.19 | |
| 18 | -6.0 | 31 | 0.72 | X |
| 19 | -4.0 | 140 | 3.25 | XXX |
| 20 | -2.0 | 255 | 5.93 | XXXXXX |
| 21 | 0.0 | 272 | 6.32 | XXXXXX |
| 22 | 2.0 | 371 | 8.62 | XXXXXXXXXX |
| 23 | 4.0 | 473 | 10.99 | XXXXXXXXXXXX |
| 24 | 6.0 | 550 | 12.78 | XXXXXXXXXXXXXX |
| 25 | 8.0 | 583 | 13.55 | XXXXXXXXXXXXXXXX |
| 26 | 10.0 | 511 | 11.88 | XXXXXXXXXXXXXX |
| 27 | 12.0 | 509 | 11.83 | XXXXXXXXXXXXXX |
| 28 | 14.0 | 327 | 7.60 | XXXXXXXXXX |
| 29 | 16.0 | 159 | 3.70 | XXXXX |
| 30 | 18.0 | 91 | 2.12 | XX |
| 31 | 20.0 | 19 | 0.44 | |
| 32 | 22.0 | 2 | 0.05 | |
| 33 | 24.0 | 0 | 0.00 | |
| 34 | 26.0 | 0 | 0.00 | |
| 35 | 28.0 | 0 | 0.00 | |
| 36 | 30.0 | 0 | 0.00 | |
| 37 | 32.0 | 0 | 0.00 | |
| 38 | 34.0 | 0 | 0.00 | |
| 39 | 36.0 | 0 | 0.00 | |
| 40 | 38.0 | 0 | 0.00 | |
| 41 | 40.0 | 0 | 0.00 | |
| 42 | >40.0 | 0 | 0.00 | |

FIGURE 3.18

V23 TEMPERATURE

NO. OF POINTS - 4302 BIN SIZE - .1 DEG C

| BIN | BOUND | FREQ | PERCENT | |
|-----|-------|------|---------|----------------------|
| 1 | <13.0 | 0 | 0.00 | |
| 2 | 13.1 | 0 | 0.00 | |
| 3 | 13.2 | 0 | 0.00 | |
| 4 | 13.3 | 0 | 0.00 | |
| 5 | 13.4 | 0 | 0.00 | |
| 6 | 13.5 | 0 | 0.00 | |
| 7 | 13.6 | 0 | 0.00 | |
| 8 | 13.7 | 0 | 0.00 | |
| 9 | 13.8 | 0 | 0.00 | |
| 10 | 13.9 | 3 | 0.07 | |
| 11 | 14.0 | 8 | 0.19 | |
| 12 | 14.1 | 9 | 0.21 | |
| 13 | 14.2 | 46 | 1.07 | X |
| 14 | 14.3 | 215 | 5.00 | XXXXXX |
| 15 | 14.4 | 431 | 10.02 | XXXXXXXXXXXX |
| 16 | 14.5 | 532 | 12.37 | XXXXXXXXXXXXXXXX |
| 17 | 14.6 | 683 | 15.88 | XXXXXXXXXXXXXXXXXXXX |
| 18 | 14.7 | 614 | 14.27 | XXXXXXXXXXXXXXXXXXXX |
| 19 | 14.8 | 574 | 13.34 | XXXXXXXXXXXXXXXXXXXX |
| 20 | 14.9 | 549 | 12.76 | XXXXXXXXXXXXXXXXXXXX |
| 21 | 15.0 | 352 | 8.18 | XXXXXXXXXX |
| 22 | 15.1 | 204 | 4.74 | XXXXXX |
| 23 | 15.2 | 59 | 1.37 | X |
| 24 | 15.3 | 7 | 0.16 | |
| 25 | 15.4 | 13 | 0.30 | |
| 26 | 15.5 | 3 | 0.07 | |
| 27 | 15.6 | 0 | 0.00 | |
| 28 | 15.7 | 0 | 0.00 | |
| 29 | 15.8 | 0 | 0.00 | |
| 30 | 15.9 | 0 | 0.00 | |
| 31 | 16.0 | 0 | 0.00 | |
| 32 | 16.1 | 0 | 0.00 | |
| 33 | 16.2 | 0 | 0.00 | |
| 34 | 16.3 | 0 | 0.00 | |
| 35 | 16.4 | 0 | 0.00 | |
| 36 | 16.5 | 0 | 0.00 | |
| 37 | 16.6 | 0 | 0.00 | |
| 38 | 16.7 | 0 | 0.00 | |
| 39 | 16.8 | 0 | 0.00 | |
| 40 | 16.9 | 0 | 0.00 | |
| 41 | 17.0 | 0 | 0.00 | |
| 42 | >17.0 | 0 | 0.00 | |

FIGURE 3.19

V25 EAST

NO. OF POINTS = 4302 BIN SIZE = 2.0 CM/SEC

| BIN | BOUND | FREQ | PERCENT |
|-----|--------|------|---|
| 1 | <-40.0 | 0 | 0.00 |
| 2 | -38.0 | 0 | 0.00 |
| 3 | -36.0 | 0 | 0.00 |
| 4 | -34.0 | 0 | 0.00 |
| 5 | -32.0 | 0 | 0.00 |
| 6 | -30.0 | 0 | 0.00 |
| 7 | -28.0 | 0 | 0.00 |
| 8 | -26.0 | 10 | 0.23 |
| 9 | -24.0 | 27 | 0.63 X |
| 10 | -22.0 | 39 | 0.91 X |
| 11 | -20.0 | 88 | 2.05 XX |
| 12 | -18.0 | 136 | 3.16 XXX |
| 13 | -16.0 | 127 | 2.95 XXX |
| 14 | -14.0 | 183 | 4.25 XXXX |
| 15 | -12.0 | 221 | 5.14 XXXXX |
| 16 | -10.0 | 224 | 5.21 XXXXX |
| 17 | -8.0 | 272 | 6.32 XXXXXX |
| 18 | -6.0 | 188 | 4.37 XXXX |
| 19 | -4.0 | 171 | 3.97 XXXX |
| 20 | -2.0 | 177 | 4.11 XXXX |
| 21 | 0.0 | 210 | 4.88 XXXXX |
| 22 | 2.0 | 1953 | 45.40 XXX |
| 23 | 4.0 | 80 | 1.86 XX |
| 24 | 6.0 | 40 | 0.93 X |
| 25 | 8.0 | 44 | 1.02 X |
| 26 | 10.0 | 58 | 1.35 X |
| 27 | 12.0 | 33 | 0.77 X |
| 28 | 14.0 | 16 | 0.37 |
| 29 | 16.0 | 3 | 0.07 |
| 30 | 18.0 | 2 | 0.05 |
| 31 | 20.0 | 0 | 0.00 |
| 32 | 22.0 | 0 | 0.00 |
| 33 | 24.0 | 0 | 0.00 |
| 34 | 26.0 | 0 | 0.00 |
| 35 | 28.0 | 0 | 0.00 |
| 36 | 30.0 | 0 | 0.00 |
| 37 | 32.0 | 0 | 0.00 |
| 38 | 34.0 | 0 | 0.00 |
| 39 | 36.0 | 0 | 0.00 |
| 40 | 38.0 | 0 | 0.00 |
| 41 | 40.0 | 0 | 0.00 |
| 42 | >40.0 | 0 | 0.00 |

FIGURE 3.20

V25 NORTH

NO. OF POINTS = 4302 BIN SIZE = 2.0 CM/SEC

| BIN | BOUND | FREQ | PERCENT | |
|-----|--------|------|---------|--|
| 1 | <-40.0 | 0 | 0.00 | |
| 2 | -38.0 | 0 | 0.00 | |
| 3 | -36.0 | 0 | 0.00 | |
| 4 | -34.0 | 0 | 0.00 | |
| 5 | -32.0 | 0 | 0.00 | |
| 6 | -30.0 | 0 | 0.00 | |
| 7 | -28.0 | 0 | 0.00 | |
| 8 | -26.0 | 0 | 0.00 | |
| 9 | -24.0 | 0 | 0.00 | |
| 10 | -22.0 | 0 | 0.00 | |
| 11 | -20.0 | 0 | 0.00 | |
| 12 | -18.0 | 0 | 0.00 | |
| 13 | -16.0 | 0 | 0.00 | |
| 14 | -14.0 | 0 | 0.00 | |
| 15 | -12.0 | 10 | 0.23 | |
| 16 | -10.0 | 35 | 0.81 | X |
| 17 | -8.0 | 60 | 1.39 | X |
| 18 | -6.0 | 82 | 1.91 | XX |
| 19 | -4.0 | 98 | 2.28 | XX |
| 20 | -2.0 | 154 | 3.58 | XXXX |
| 21 | 0.0 | 311 | 7.23 | XXXXXXXX |
| 22 | 2.0 | 2073 | 48.19 | XX |
| 23 | 4.0 | 331 | 7.69 | XXXXXXXXXX |
| 24 | 6.0 | 283 | 6.58 | XXXXXXXXXX |
| 25 | 8.0 | 275 | 6.39 | XXXXXXXXXX |
| 26 | 10.0 | 252 | 5.86 | XXXXXXXXXX |
| 27 | 12.0 | 190 | 4.42 | XXXX |
| 28 | 14.0 | 99 | 2.30 | XX |
| 29 | 16.0 | 35 | 0.81 | X |
| 30 | 18.0 | 8 | 0.19 | |
| 31 | 20.0 | 6 | 0.14 | |
| 32 | 22.0 | 0 | 0.00 | |
| 33 | 24.0 | 0 | 0.00 | |
| 34 | 26.0 | 0 | 0.00 | |
| 35 | 28.0 | 0 | 0.00 | |
| 36 | 30.0 | 0 | 0.00 | |
| 37 | 32.0 | 0 | 0.00 | |
| 38 | 34.0 | 0 | 0.00 | |
| 39 | 36.0 | 0 | 0.00 | |
| 40 | 38.0 | 0 | 0.00 | |
| 41 | 40.0 | 0 | 0.00 | |
| 42 | >40.0 | 0 | 0.00 | |

FIGURE 3.21

V25 TEMPERATURE

NO. OF POINTS = 4302 BIN SIZE = .1 DEG C

| BIN | BOUND | FREQ | PERCENT | |
|-----|-------|------|---------|------------------|
| 1 | <12.0 | 0 | 0.00 | |
| 2 | 12.1 | 0 | 0.00 | |
| 3 | 12.2 | 0 | 0.00 | |
| 4 | 12.3 | 0 | 0.00 | |
| 5 | 12.4 | 0 | 0.00 | |
| 6 | 12.5 | 0 | 0.00 | |
| 7 | 12.6 | 0 | 0.00 | |
| 8 | 12.7 | 0 | 0.00 | |
| 9 | 12.8 | 0 | 0.00 | |
| 10 | 12.9 | 0 | 0.00 | |
| 11 | 13.0 | 27 | 0.63 | X |
| 12 | 13.1 | 20 | 0.46 | |
| 13 | 13.2 | 21 | 0.49 | |
| 14 | 13.3 | 26 | 0.60 | X |
| 15 | 13.4 | 69 | 1.60 | XX |
| 16 | 13.5 | 144 | 3.35 | XXX |
| 17 | 13.6 | 258 | 6.00 | XXXXXX |
| 18 | 13.7 | 338 | 7.86 | XXXXXXXX |
| 19 | 13.8 | 557 | 12.95 | XXXXXXXXXXXXXXXX |
| 20 | 13.9 | 591 | 13.74 | XXXXXXXXXXXXXXXX |
| 21 | 14.0 | 615 | 14.30 | XXXXXXXXXXXXXXXX |
| 22 | 14.1 | 526 | 12.23 | XXXXXXXXXXXXXXXX |
| 23 | 14.2 | 447 | 10.39 | XXXXXXXXXX |
| 24 | 14.3 | 292 | 6.79 | XXXXXXX |
| 25 | 14.4 | 158 | 3.67 | XXXXX |
| 26 | 14.5 | 104 | 2.42 | XX |
| 27 | 14.6 | 59 | 1.37 | X |
| 28 | 14.7 | 37 | 0.86 | X |
| 29 | 14.8 | 11 | 0.26 | |
| 30 | 14.9 | 2 | 0.05 | |
| 31 | 15.0 | 0 | 0.00 | |
| 32 | 15.1 | 0 | 0.00 | |
| 33 | 15.2 | 0 | 0.00 | |
| 34 | 15.3 | 0 | 0.00 | |
| 35 | 15.4 | 0 | 0.00 | |
| 36 | 15.5 | 0 | 0.00 | |
| 37 | 15.6 | 0 | 0.00 | |
| 38 | 15.7 | 0 | 0.00 | |
| 39 | 15.8 | 0 | 0.00 | |
| 40 | 15.9 | 0 | 0.00 | |
| 41 | 16.0 | 0 | 0.00 | |
| 42 | >16.0 | 0 | 0.00 | |

FIGURE 3.22

V26 EAST

NO. OF POINTS = 4303 BIN SIZE = 2.0 CM/SEC

| BIN | BOUND | FREQ | PERCENT | |
|-----|--------|------|---------|------------|
| 1 | <-40.0 | 0 | 0.00 | |
| 2 | -38.0 | 0 | 0.00 | |
| 3 | -36.0 | 0 | 0.00 | |
| 4 | -34.0 | 0 | 0.00 | |
| 5 | -32.0 | 0 | 0.00 | |
| 6 | -30.0 | 0 | 0.00 | |
| 7 | -28.0 | 0 | 0.00 | |
| 8 | -26.0 | 6 | 0.14 | |
| 9 | -24.0 | 8 | 0.19 | |
| 10 | -22.0 | 13 | 0.30 | |
| 11 | -20.0 | 24 | 0.56 | X |
| 12 | -18.0 | 43 | 1.00 | X |
| 13 | -16.0 | 97 | 2.25 | XX |
| 14 | -14.0 | 101 | 2.35 | XX |
| 15 | -12.0 | 179 | 4.16 | XXXX |
| 16 | -10.0 | 338 | 7.85 | XXXXXXXX |
| 17 | -8.0 | 340 | 7.90 | XXXXXXXX |
| 18 | -6.0 | 428 | 9.95 | XXXXXXXXXX |
| 19 | -4.0 | 429 | 9.97 | XXXXXXXXXX |
| 20 | -2.0 | 335 | 7.79 | XXXXXXXX |
| 21 | 0.0 | 260 | 6.04 | XXXXXX |
| 22 | 2.0 | 295 | 6.86 | XXXXXX |
| 23 | 4.0 | 312 | 7.25 | XXXXXX |
| 24 | 6.0 | 272 | 6.32 | XXXXXX |
| 25 | 8.0 | 258 | 6.00 | XXXXXX |
| 26 | 10.0 | 216 | 5.02 | XXXXX |
| 27 | 12.0 | 131 | 3.04 | XXX |
| 28 | 14.0 | 107 | 2.49 | XX |
| 29 | 16.0 | 61 | 1.42 | X |
| 30 | 18.0 | 32 | 0.74 | X |
| 31 | 20.0 | 16 | 0.37 | |
| 32 | 22.0 | 2 | 0.05 | |
| 33 | 24.0 | 0 | 0.00 | |
| 34 | 26.0 | 0 | 0.00 | |
| 35 | 28.0 | 0 | 0.00 | |
| 36 | 30.0 | 0 | 0.00 | |
| 37 | 32.0 | 0 | 0.00 | |
| 38 | 34.0 | 0 | 0.00 | |
| 39 | 36.0 | 0 | 0.00 | |
| 40 | 38.0 | 0 | 0.00 | |
| 41 | 40.0 | 0 | 0.00 | |
| 42 | >40.0 | 0 | 0.00 | |

FIGURE 3.23

V26 NORTH

NO. OF POINTS = 4303 BIN SIZE = 2.0 CM/SEC

| BIN | BOUND | FREQ | PERCENT | |
|-----|--------|------|---------|------------------------------|
| 1 | <-40.0 | 0 | 0.00 | |
| 2 | -38.0 | 0 | 0.00 | |
| 3 | -36.0 | 0 | 0.00 | |
| 4 | -34.0 | 0 | 0.00 | |
| 5 | -32.0 | 0 | 0.00 | |
| 6 | -30.0 | 0 | 0.00 | |
| 7 | -28.0 | 0 | 0.00 | |
| 8 | -26.0 | 0 | 0.00 | |
| 9 | -24.0 | 0 | 0.00 | |
| 10 | -22.0 | 0 | 0.00 | |
| 11 | -20.0 | 0 | 0.00 | |
| 12 | -18.0 | 0 | 0.00 | |
| 13 | -16.0 | 0 | 0.00 | |
| 14 | -14.0 | 0 | 0.00 | |
| 15 | -12.0 | 0 | 0.00 | |
| 16 | -10.0 | 5 | 0.12 | |
| 17 | -8.0 | 15 | 0.35 | |
| 18 | -6.0 | 65 | 1.51 | XX |
| 19 | -4.0 | 234 | 5.44 | XXXXX |
| 20 | -2.0 | 674 | 15.66 | XXXXXXXXXXXXXXXXXXXX |
| 21 | 0.0 | 1097 | 25.49 | XXXXXXXXXXXXXXXXXXXXXXXXXXXX |
| 22 | 2.0 | 844 | 19.61 | XXXXXXXXXXXXXXXXXXXXXXXXXXXX |
| 23 | 4.0 | 506 | 11.76 | XXXXXXXXXXXXXX |
| 24 | 6.0 | 274 | 6.37 | XXXXXX |
| 25 | 8.0 | 141 | 3.28 | XXX |
| 26 | 10.0 | 96 | 2.23 | XX |
| 27 | 12.0 | 77 | 1.79 | XX |
| 28 | 14.0 | 62 | 1.44 | X |
| 29 | 16.0 | 45 | 1.05 | X |
| 30 | 18.0 | 45 | 1.05 | X |
| 31 | 20.0 | 32 | 0.74 | X |
| 32 | 22.0 | 42 | 0.98 | X |
| 33 | 24.0 | 18 | 0.42 | |
| 34 | 26.0 | 16 | 0.37 | |
| 35 | 28.0 | 8 | 0.19 | |
| 36 | 30.0 | 3 | 0.07 | |
| 37 | 32.0 | 3 | 0.07 | |
| 38 | 34.0 | 1 | 0.02 | |
| 39 | 36.0 | 0 | 0.00 | |
| 40 | 38.0 | 0 | 0.00 | |
| 41 | 40.0 | 0 | 0.00 | |
| 42 | >40.0 | 0 | 0.00 | |

FIGURE 3.24

V26 TEMPERATURE

NO. OF POINTS - 4303 BIN SIZE - .1 DEG C

| BIN | BOUND | FREQ | PERCENT | |
|-----|-------|------|---------|--------------|
| 1 | <9.0 | 0 | 0.00 | |
| 2 | 9.1 | 0 | 0.00 | |
| 3 | 9.2 | 0 | 0.00 | |
| 4 | 9.3 | 0 | 0.00 | |
| 5 | 9.4 | 0 | 0.00 | |
| 6 | 9.5 | 0 | 0.00 | |
| 7 | 9.6 | 0 | 0.00 | |
| 8 | 9.7 | 0 | 0.00 | |
| 9 | 9.8 | 1 | 0.02 | |
| 10 | 9.9 | 3 | 0.07 | |
| 11 | 10.0 | 17 | 0.40 | |
| 12 | 10.1 | 18 | 0.42 | |
| 13 | 10.2 | 21 | 0.49 | |
| 14 | 10.3 | 44 | 1.02 | X |
| 15 | 10.4 | 96 | 2.23 | XX |
| 16 | 10.5 | 99 | 2.30 | XX |
| 17 | 10.6 | 99 | 2.30 | XX |
| 18 | 10.7 | 126 | 2.93 | XXX |
| 19 | 10.8 | 132 | 3.07 | XXX |
| 20 | 10.9 | 241 | 5.60 | XXXXXXX |
| 21 | 11.0 | 229 | 5.32 | XXXXXX |
| 22 | 11.1 | 236 | 5.48 | XXXXXX |
| 23 | 11.2 | 250 | 5.81 | XXXXXXX |
| 24 | 11.3 | 312 | 7.25 | XXXXXXXX |
| 25 | 11.4 | 326 | 7.58 | XXXXXXXXX |
| 26 | 11.5 | 333 | 7.74 | XXXXXXXXX |
| 27 | 11.6 | 477 | 11.09 | XXXXXXXXXXXX |
| 28 | 11.7 | 286 | 6.65 | XXXXXXXX |
| 29 | 11.8 | 218 | 5.07 | XXXXXX |
| 30 | 11.9 | 195 | 4.53 | XXXXXX |
| 31 | 12.0 | 202 | 4.69 | XXXXXX |
| 32 | 12.1 | 114 | 2.65 | XXX |
| 33 | 12.2 | 58 | 1.35 | X |
| 34 | 12.3 | 62 | 1.44 | X |
| 35 | 12.4 | 51 | 1.19 | X |
| 36 | 12.5 | 25 | 0.58 | X |
| 37 | 12.6 | 12 | 0.28 | |
| 38 | 12.7 | 12 | 0.28 | |
| 39 | 12.8 | 5 | 0.12 | |
| 40 | 12.9 | 3 | 0.07 | |
| 41 | 13.0 | 0 | 0.00 | |
| 42 | >13.0 | 0 | 0.00 | |

FIGURE 3.25

V11

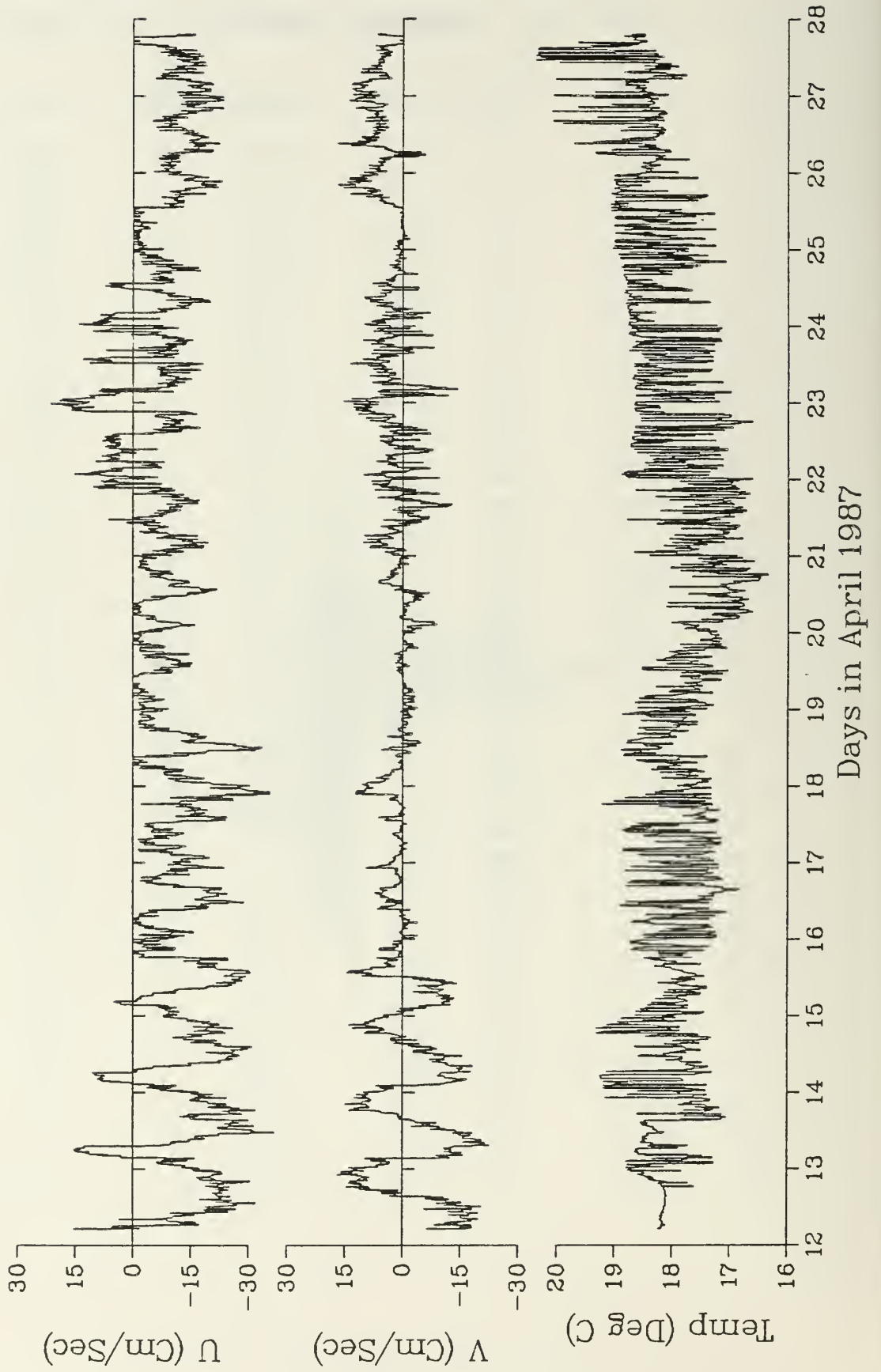


FIGURE 3.26

V12

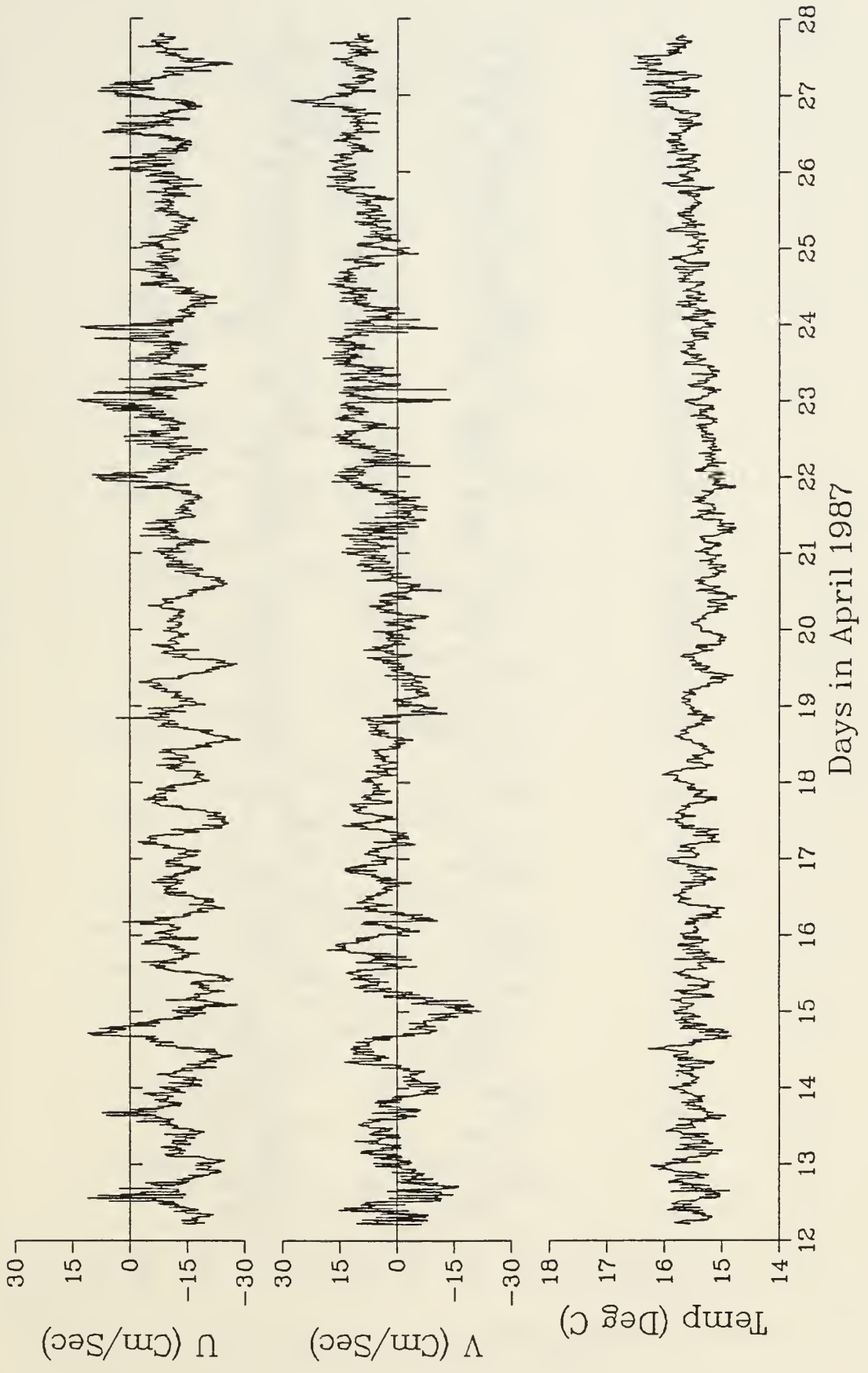


FIGURE 3.27

V13

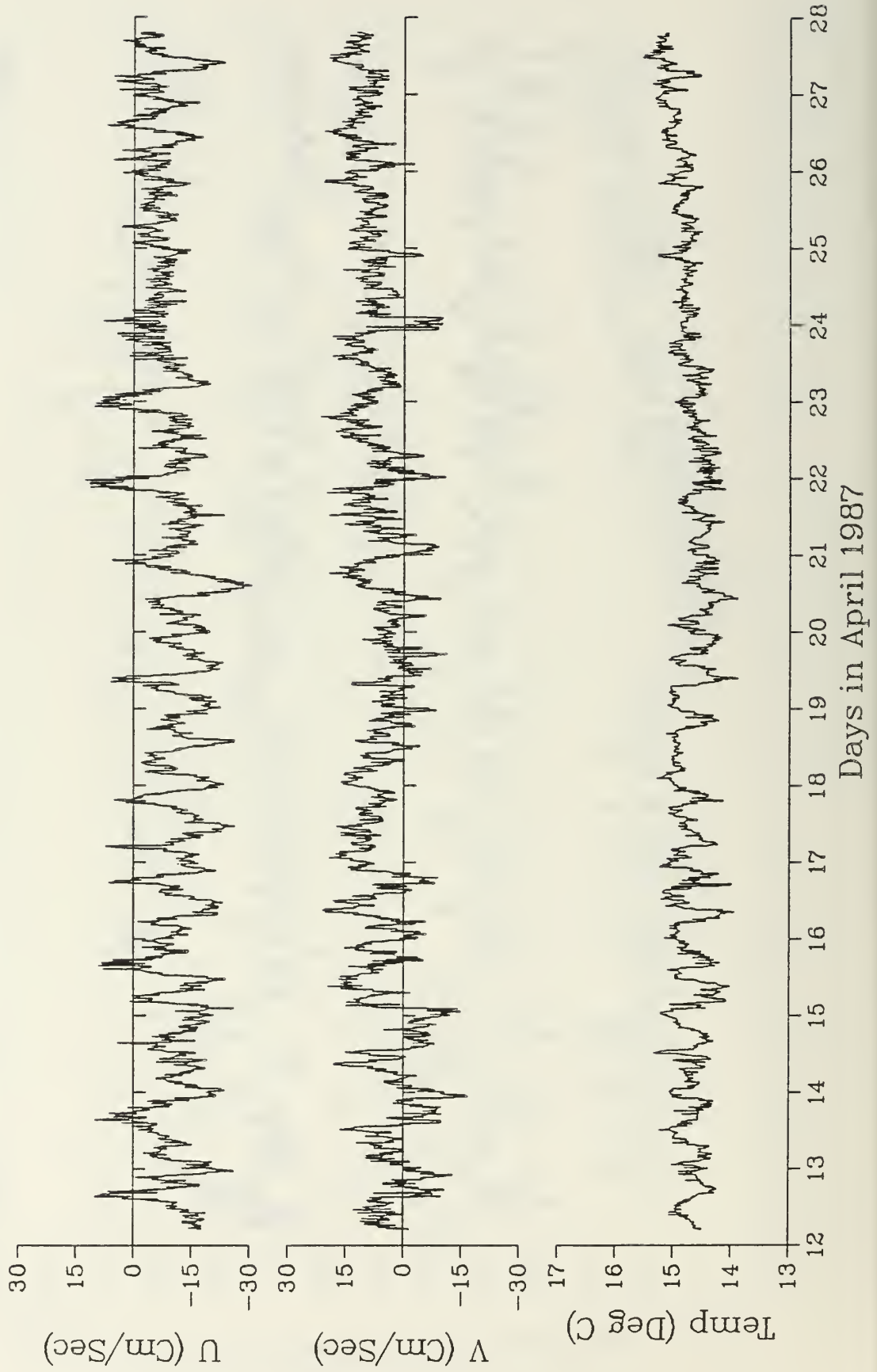
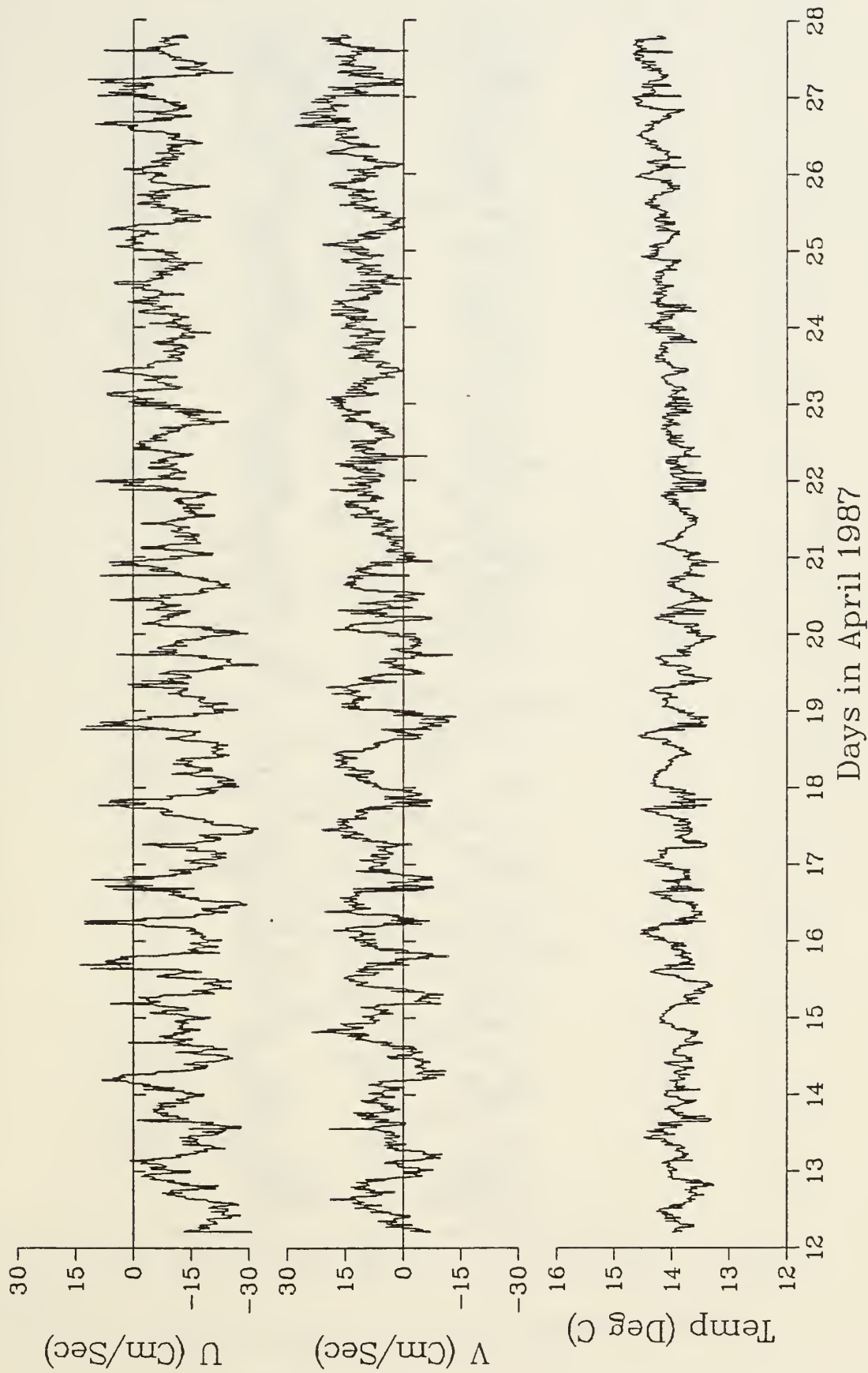


FIGURE 3.28

V14



V15

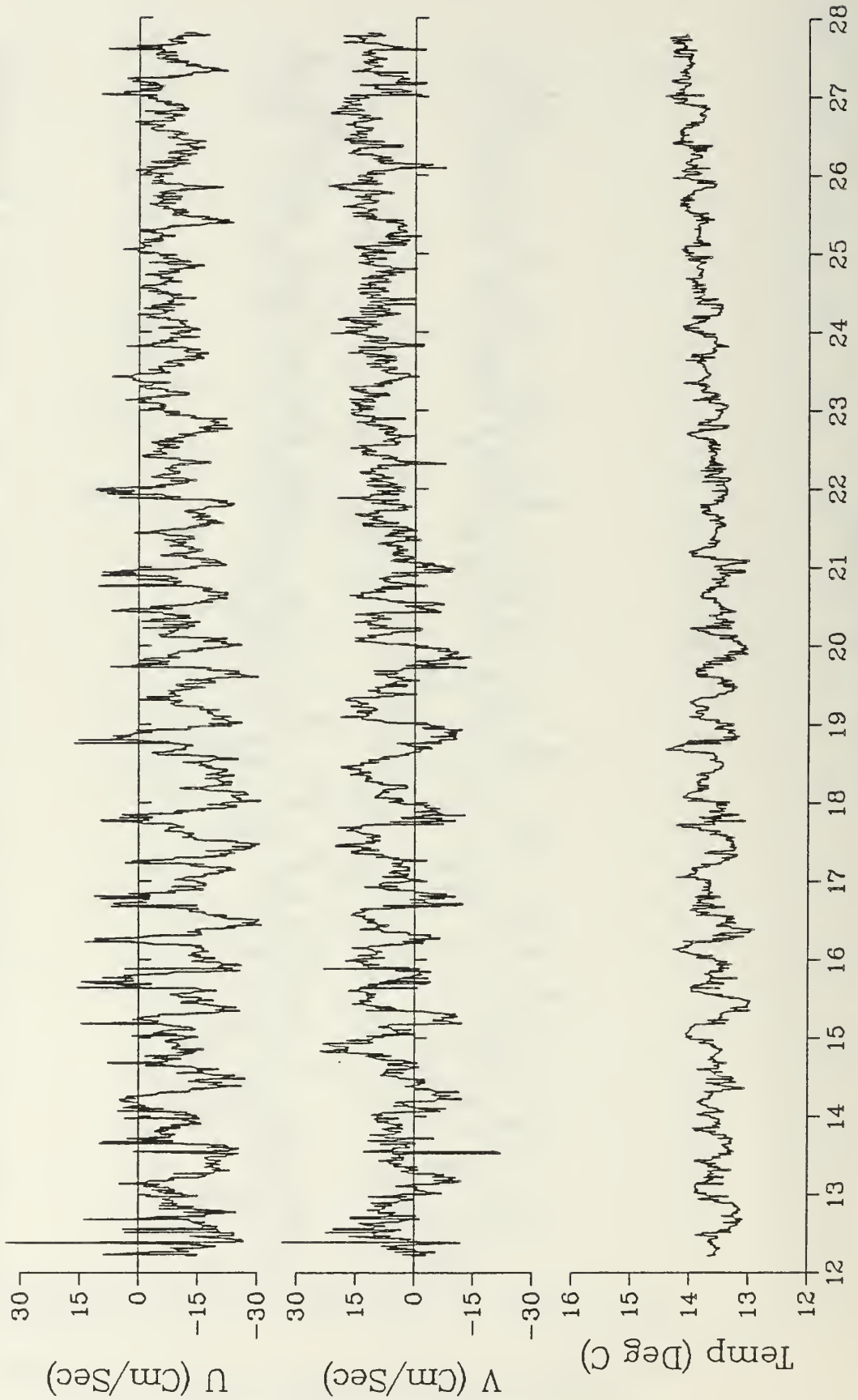


FIGURE 3.30

V23

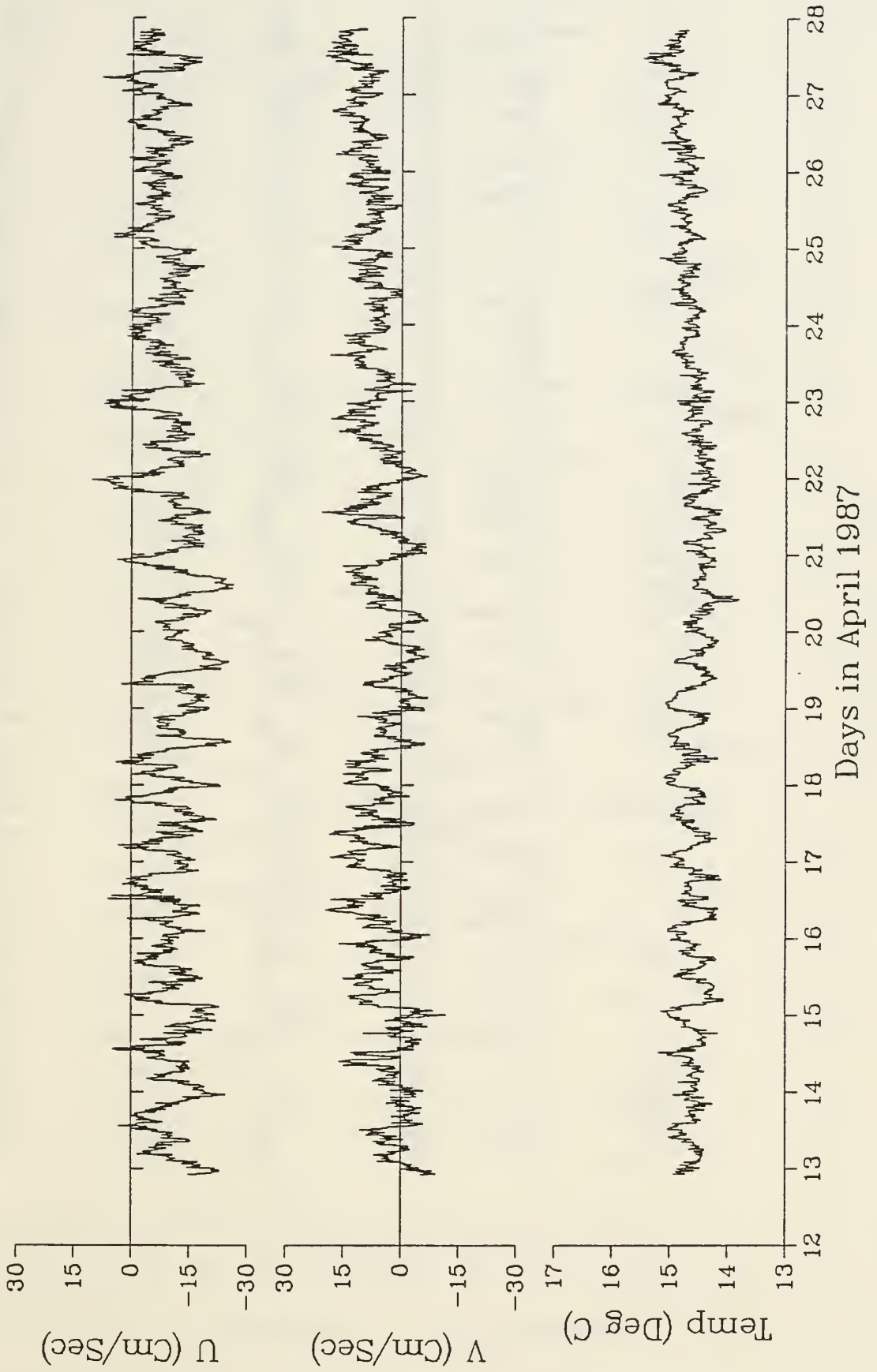


FIGURE 3.31

V25

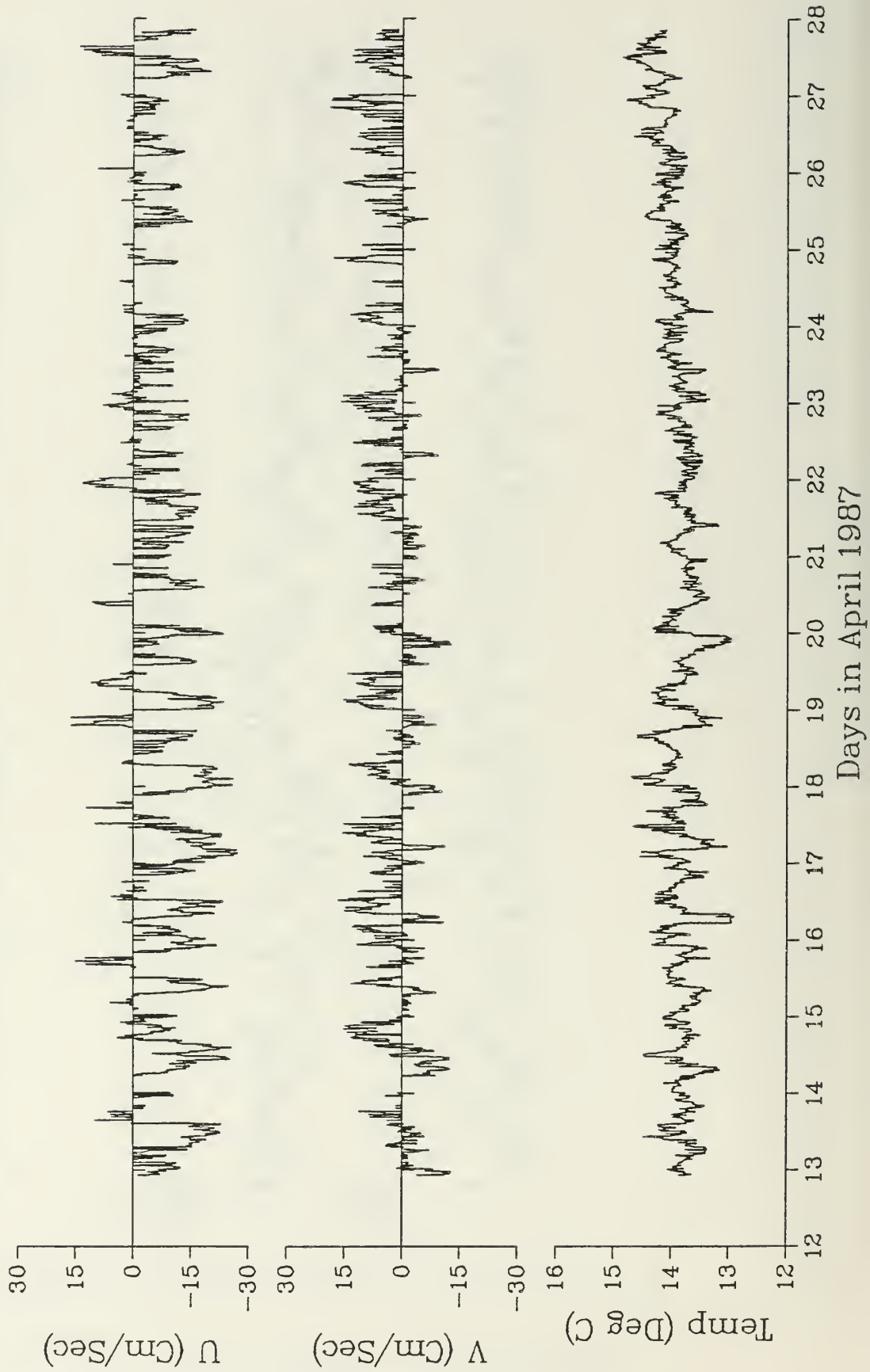
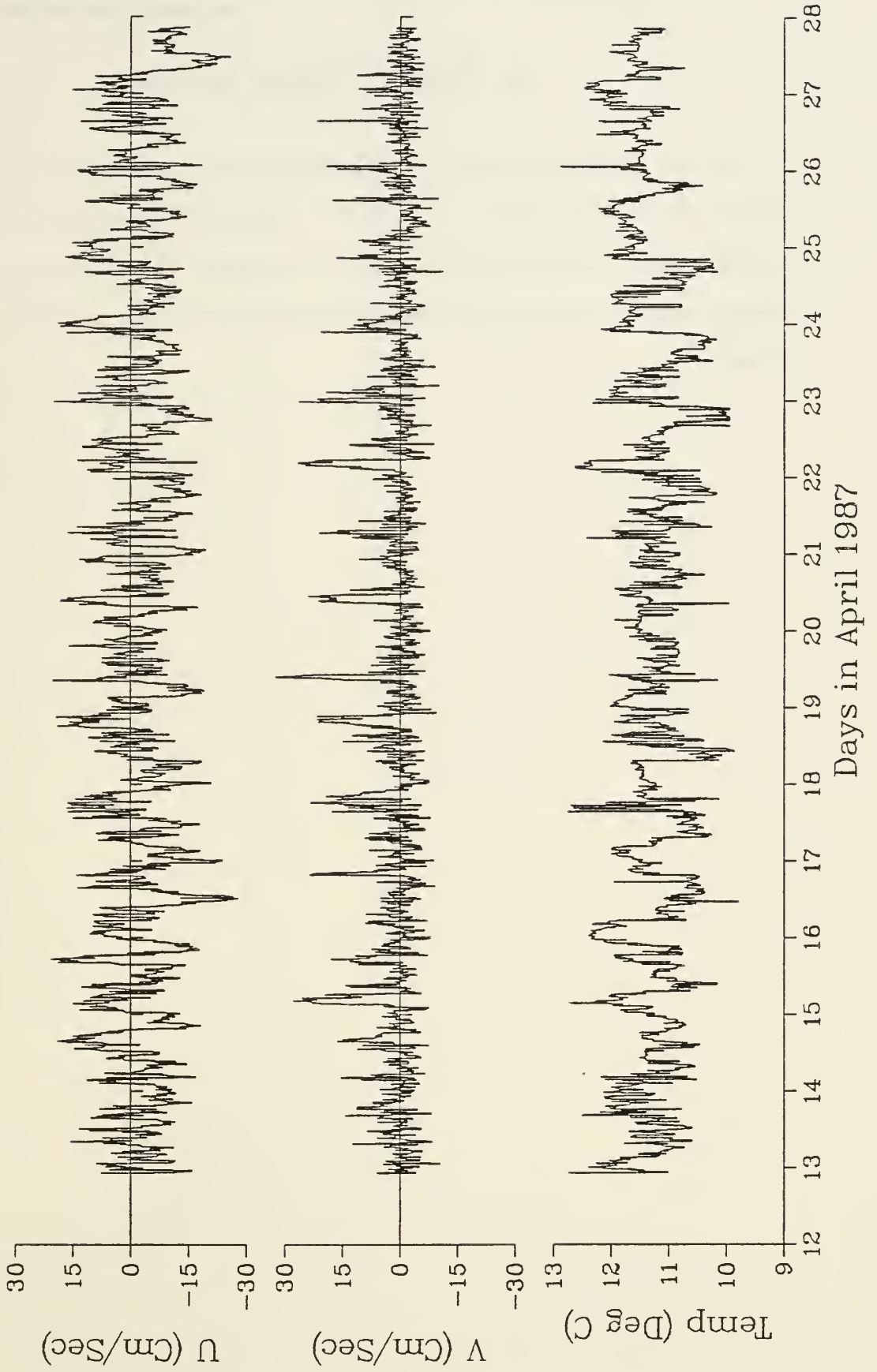


FIGURE 3.32

V26



4. Hourly Time Series

The raw velocity component and temperature data were truncated by the window of 2330 GMT 12 April 1987 to 1330 GMT 27 April 1987 to account for differences in the deployment and recovery times of the two moorings. The hourly vector averaged velocity components and scalar averaged temperature time series are shown in Figure 4 on page 43.

Figure 4. Figures 4.1 - 4.8: Hourly vector averaged time series of the velocity components and temperature.

FIGURE 4.1

V11

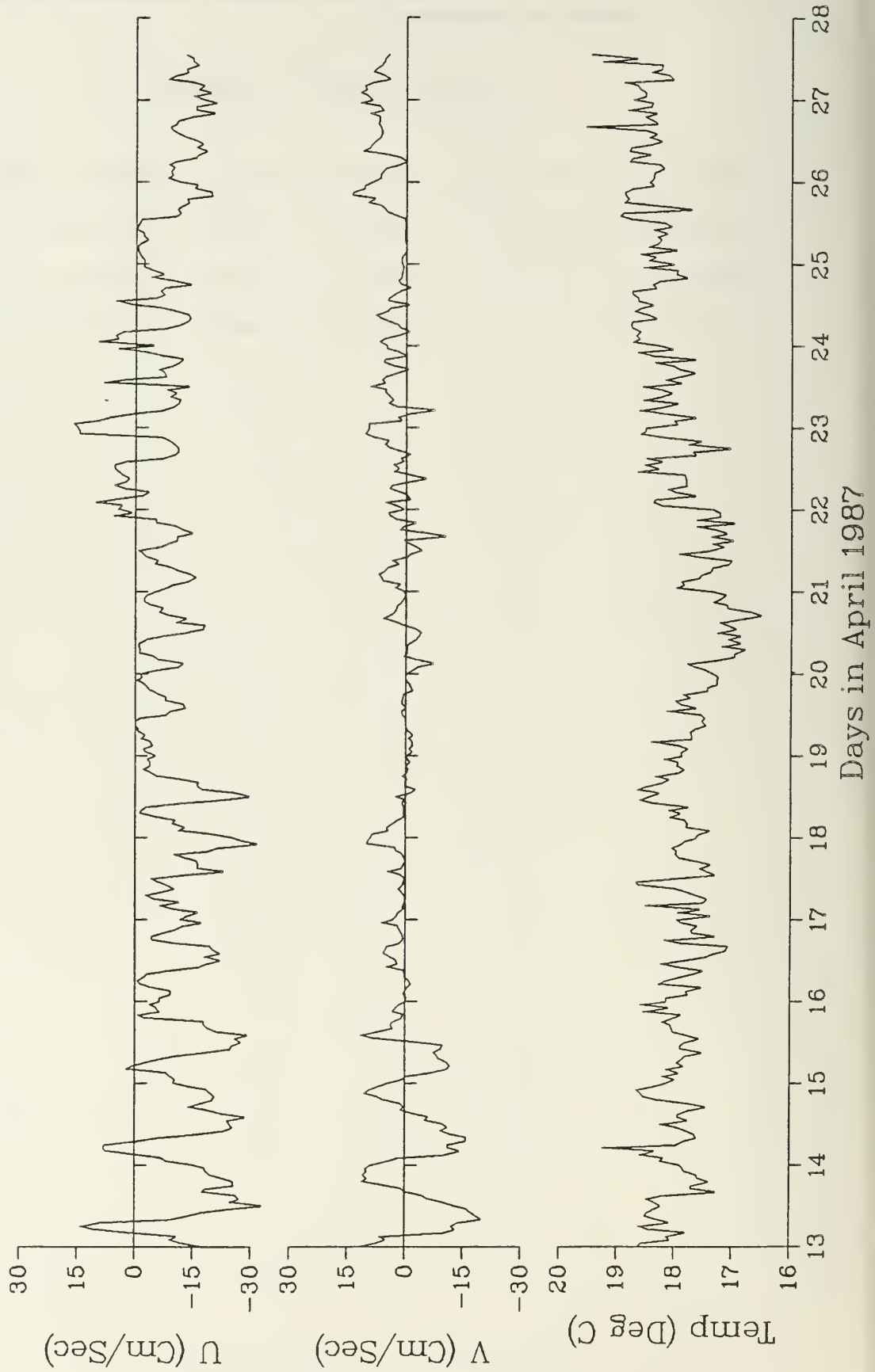


FIGURE 4.2

V12

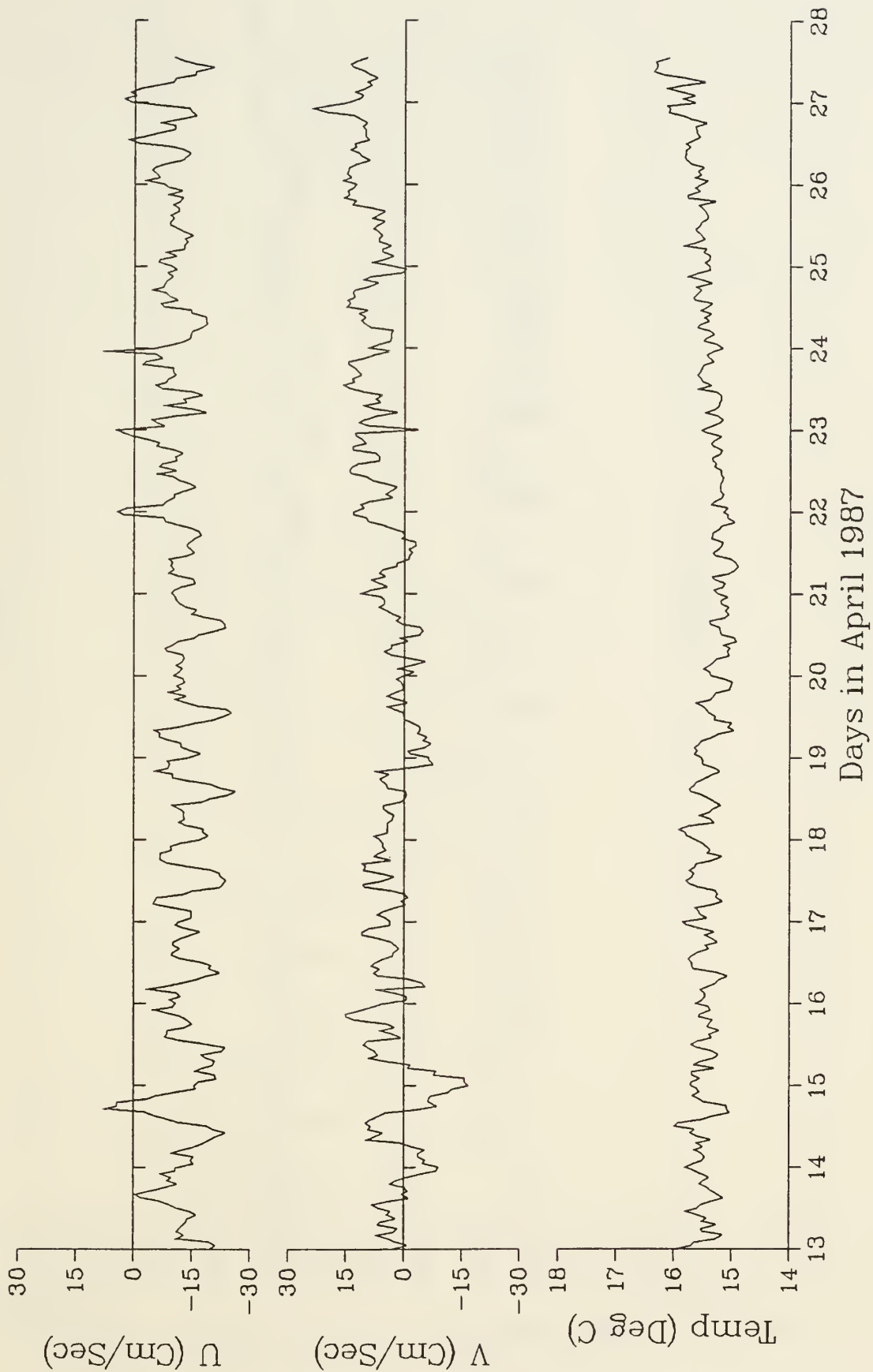


FIGURE 4.3

V13

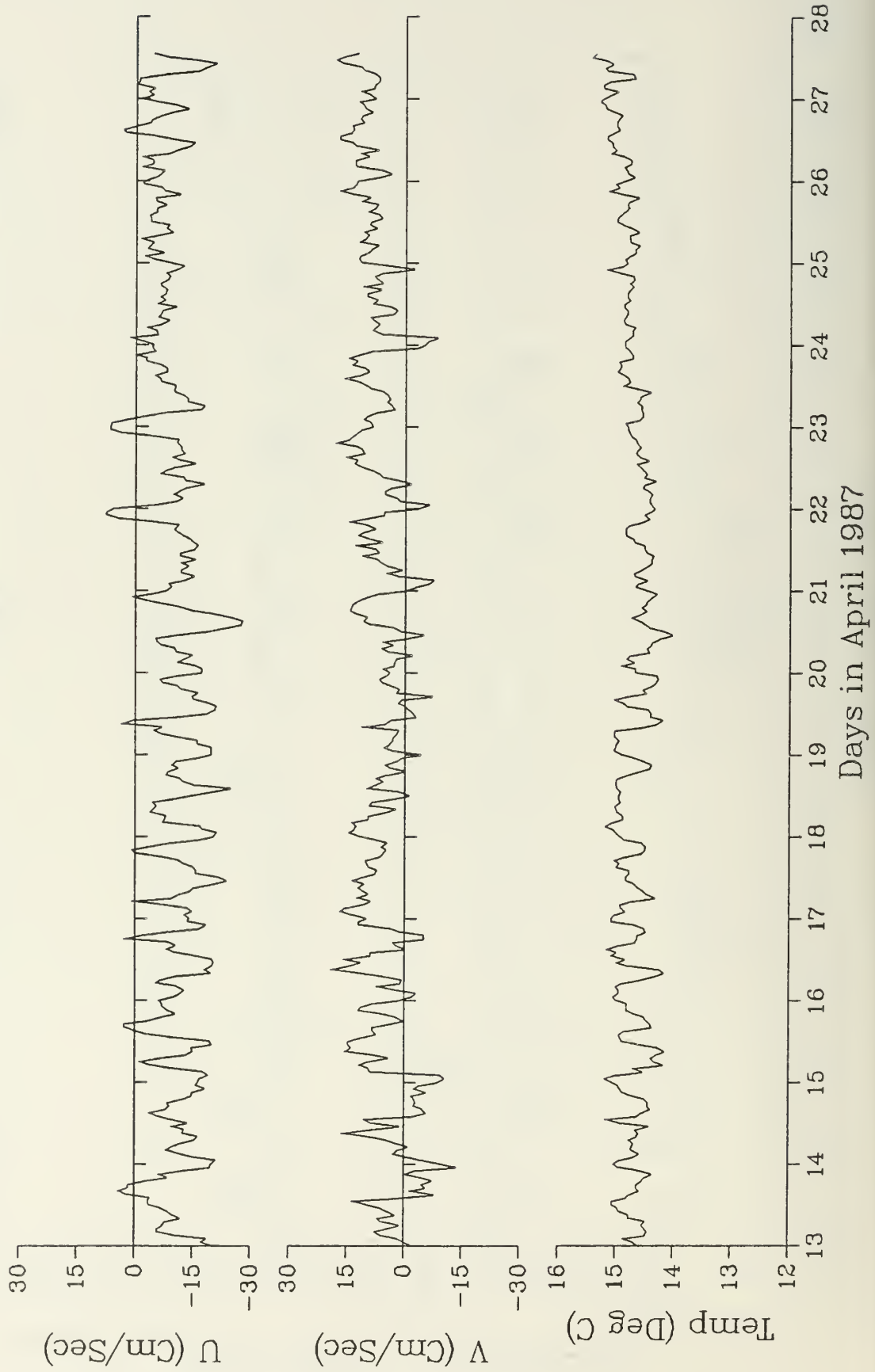


FIGURE 4.4

V14

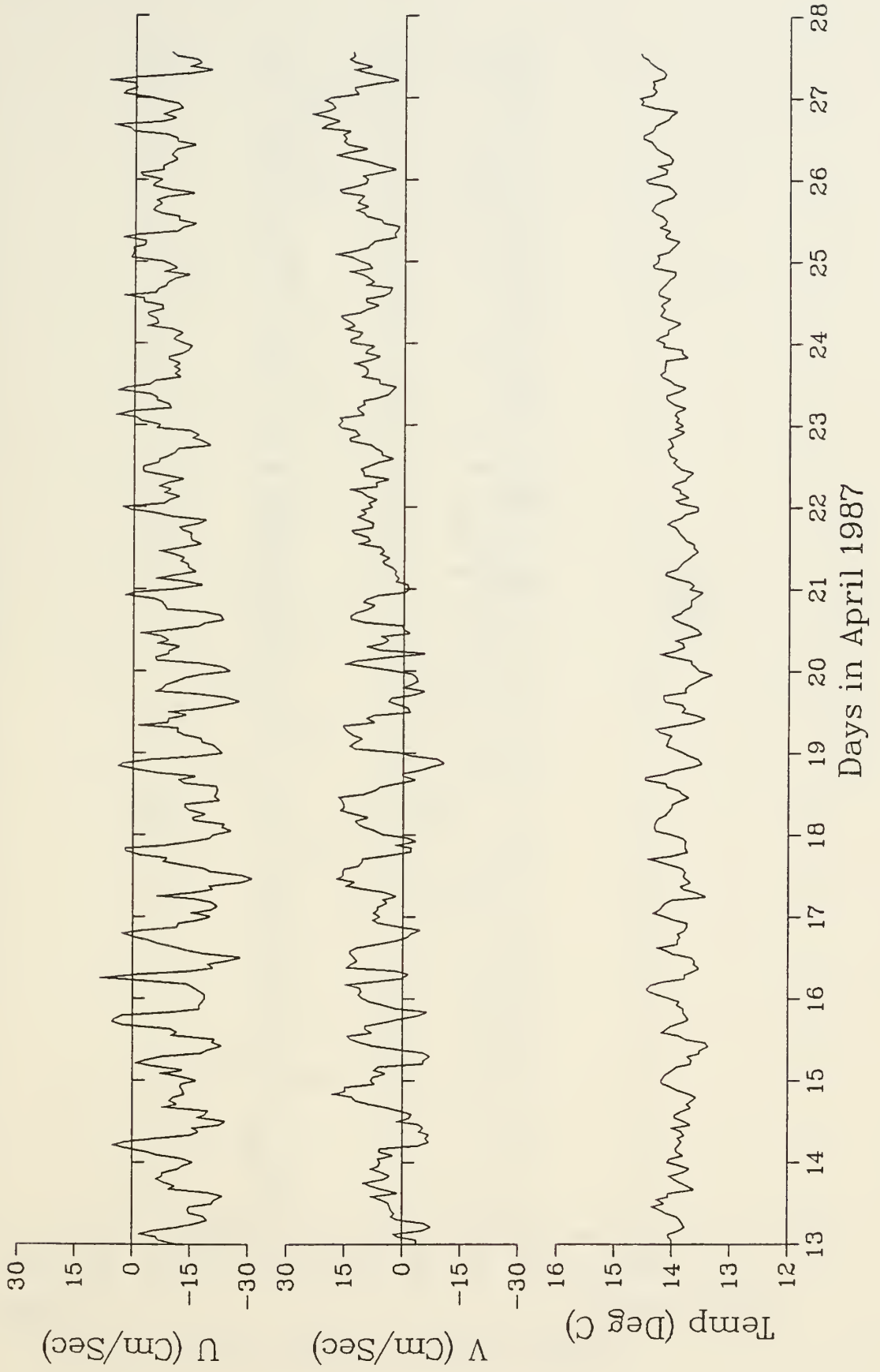
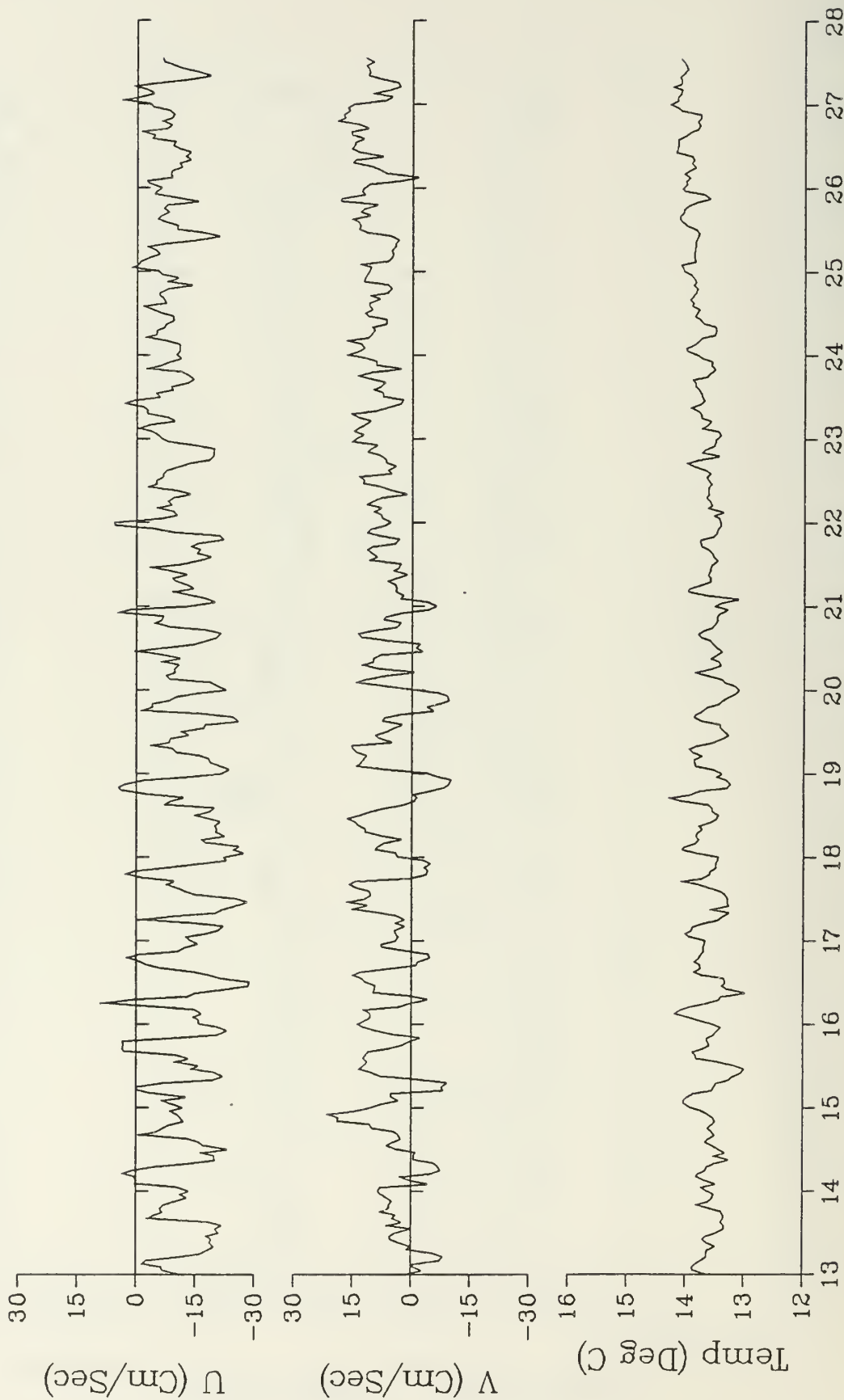


FIGURE 4.5

V15



Days in April 1987

FIGURE 4.6

V23

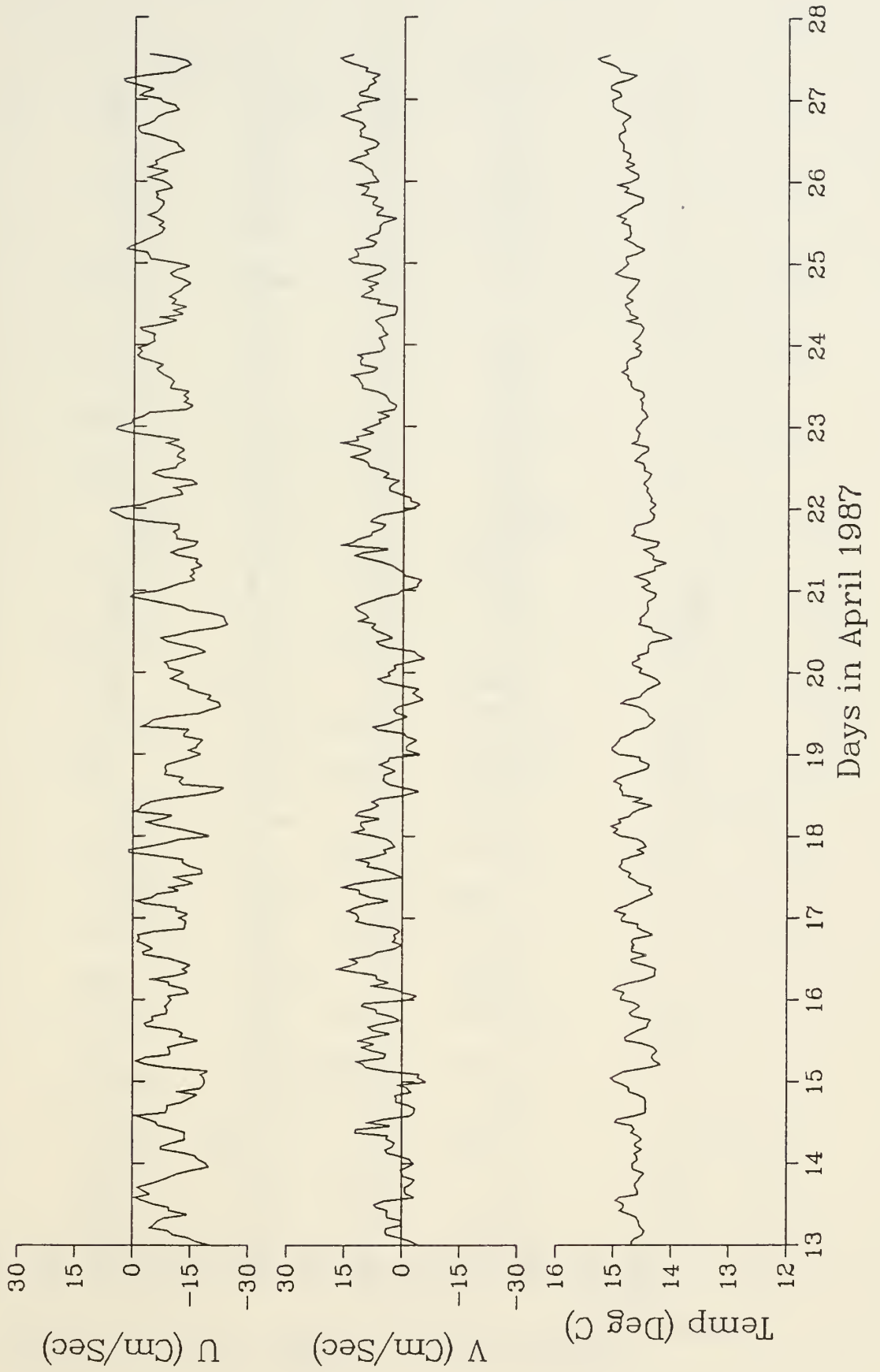


FIGURE 4.7

V25

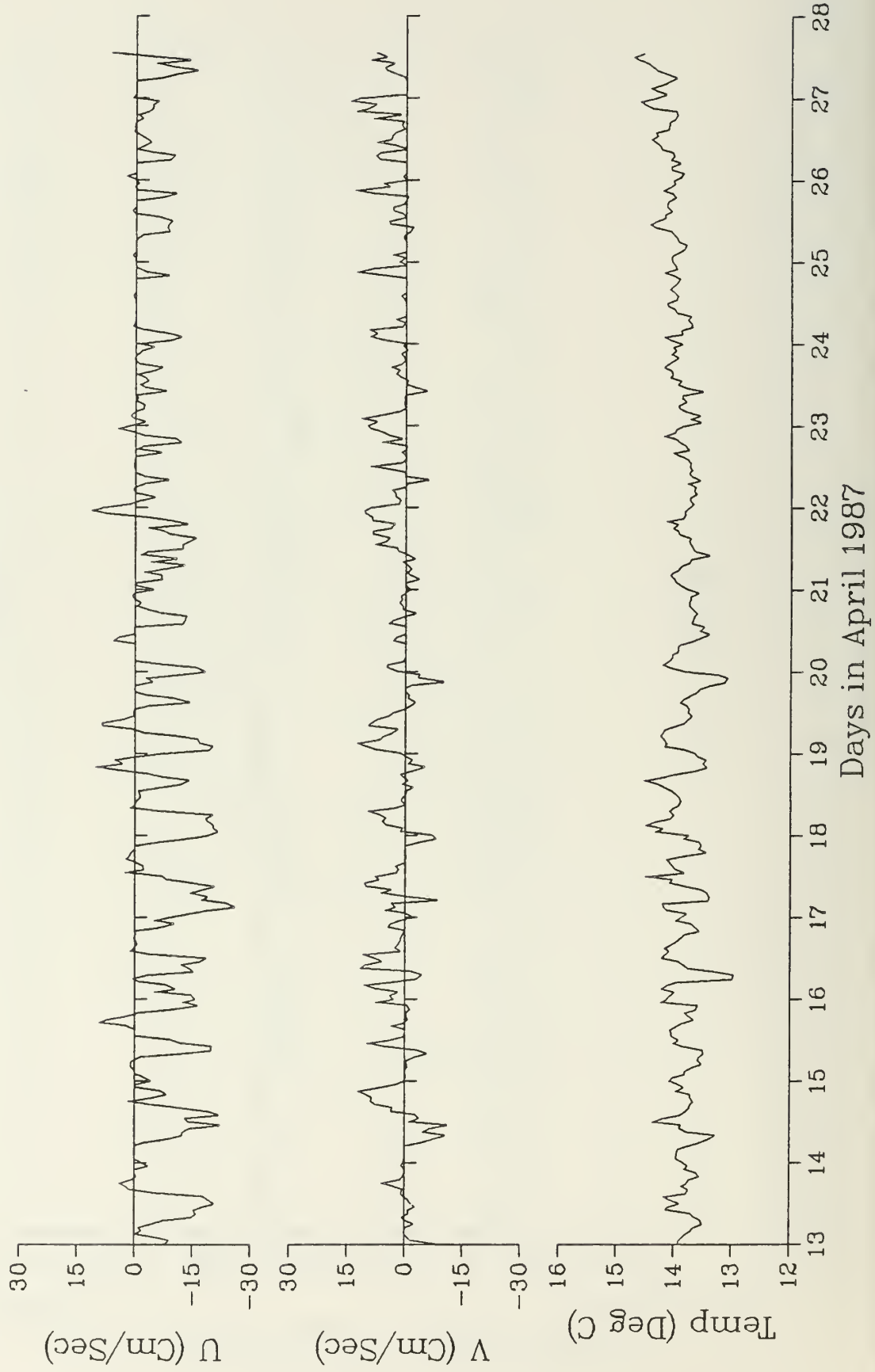
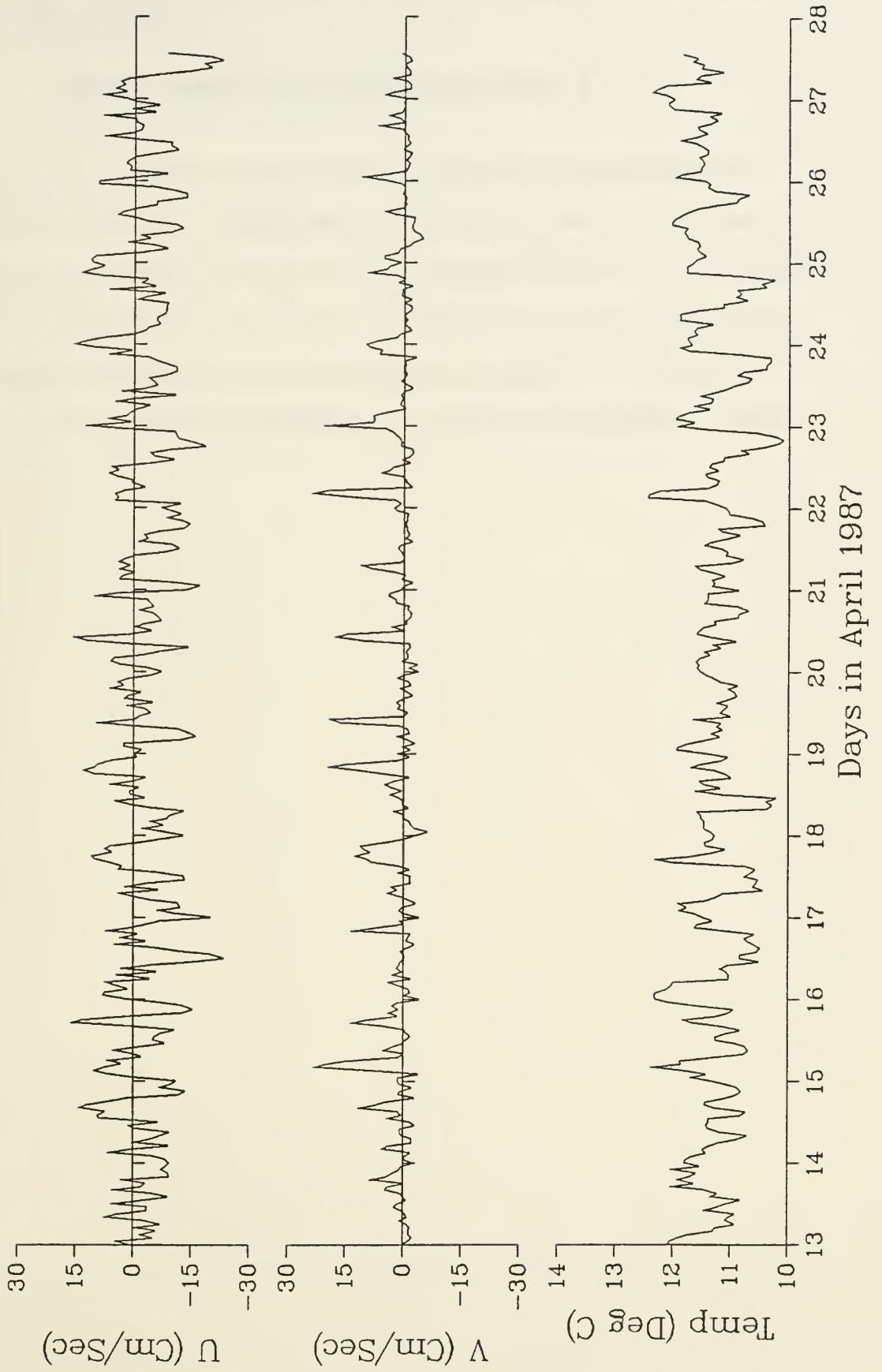


FIGURE 4.8

V26



5. Low Pass Filtered Time Series

The raw data were truncated as before to account for differences in the deployment and recovery of the moorings and for the filtering scheme. The records therefore begin at 2330 GMT 12 April 1987 and end at 1130 27 April 1987. The data were then low pass filtered using a ten percent cosine taper function with a six-hour sampling period and the resultant values were divided by .86 to correct for the reduction in magnitude caused by the filter. A cubic spline was applied to the filtered data as shown in Figure 5 on page 53.

Figure 5. Figures 5.1 - 5.8: Time series of the low pass filtered velocity components and temperature.

FIGURE 5.1

V11

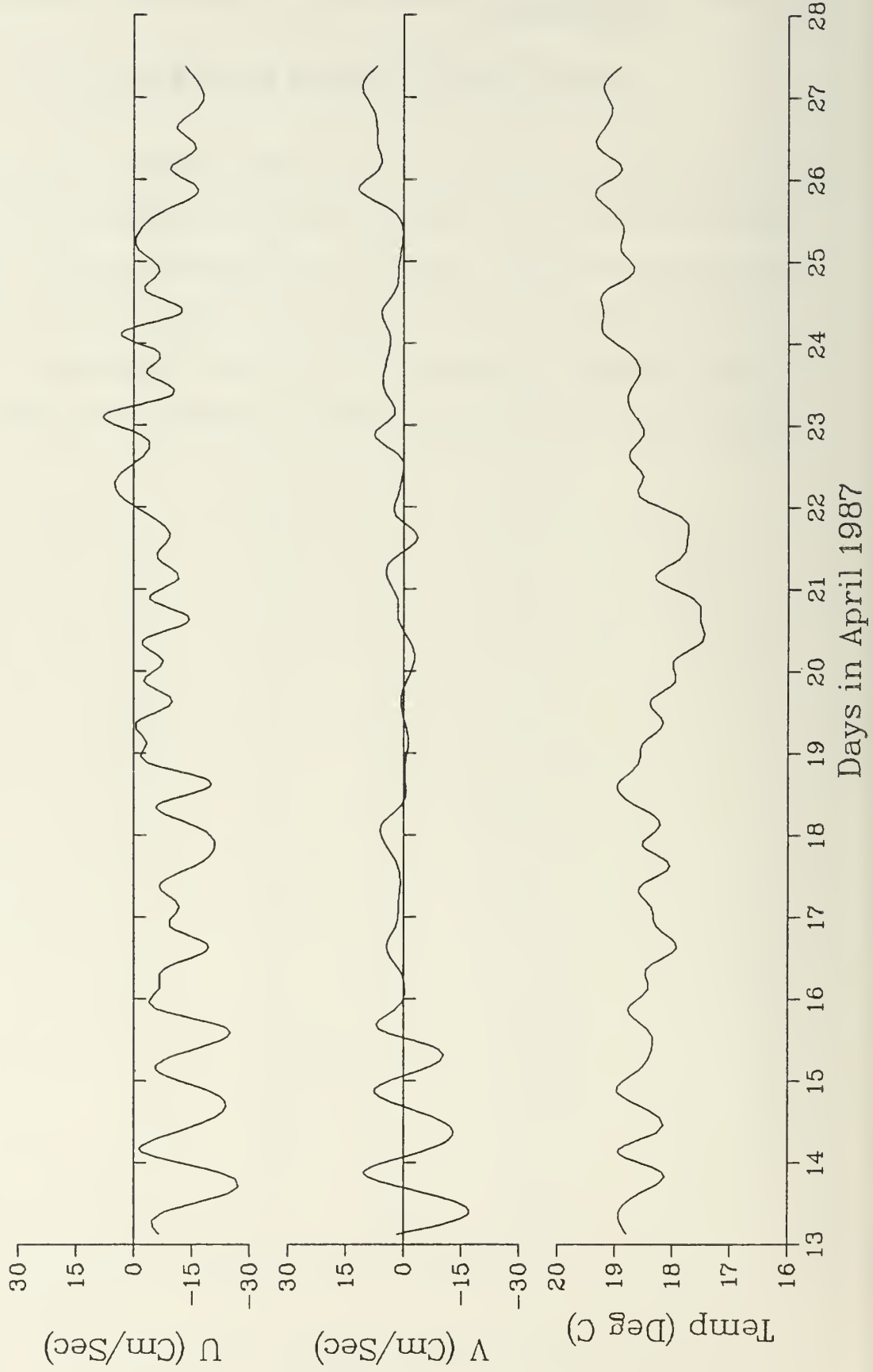


FIGURE 5.2

V12

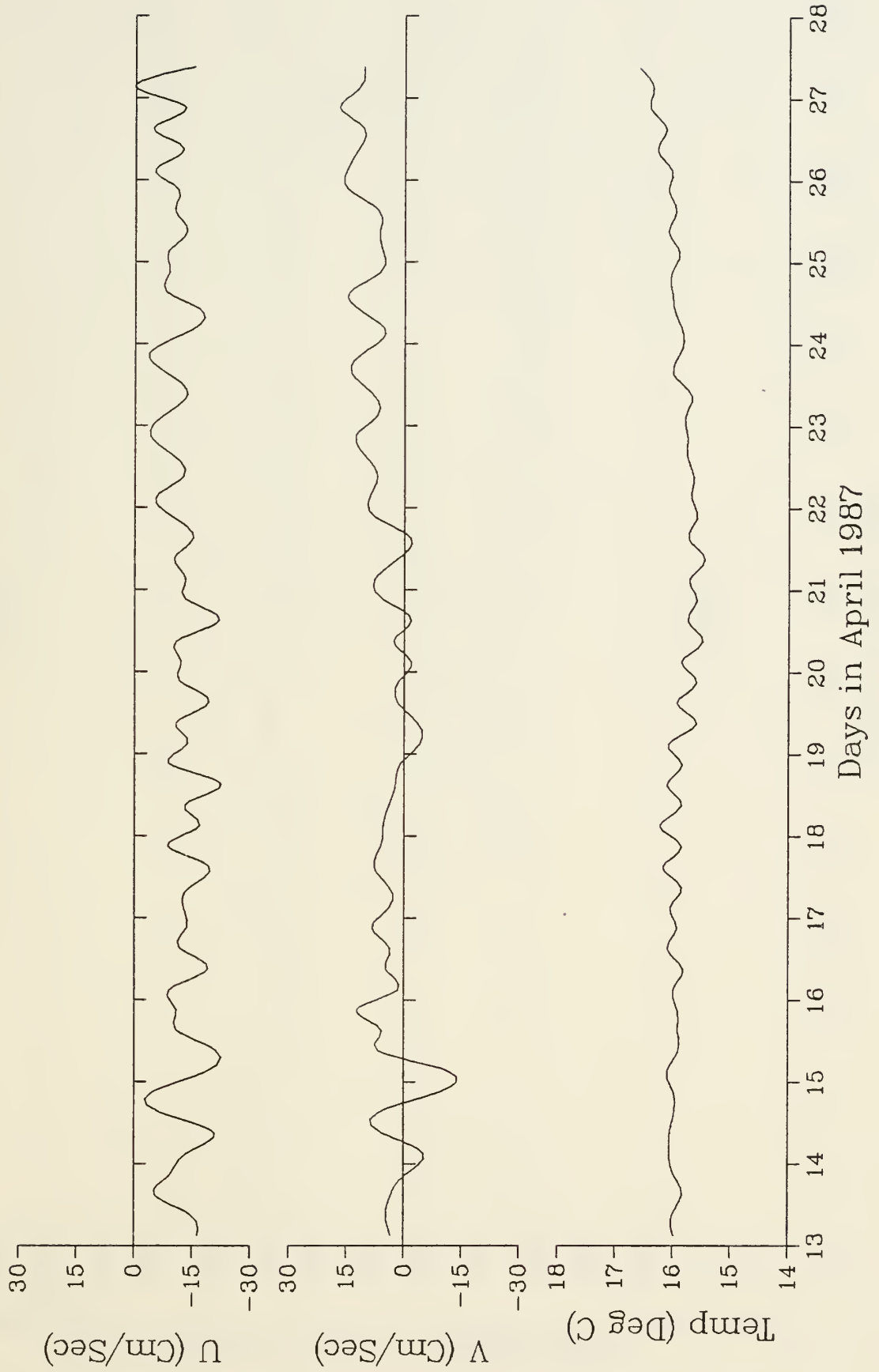


FIGURE 5.3

V13

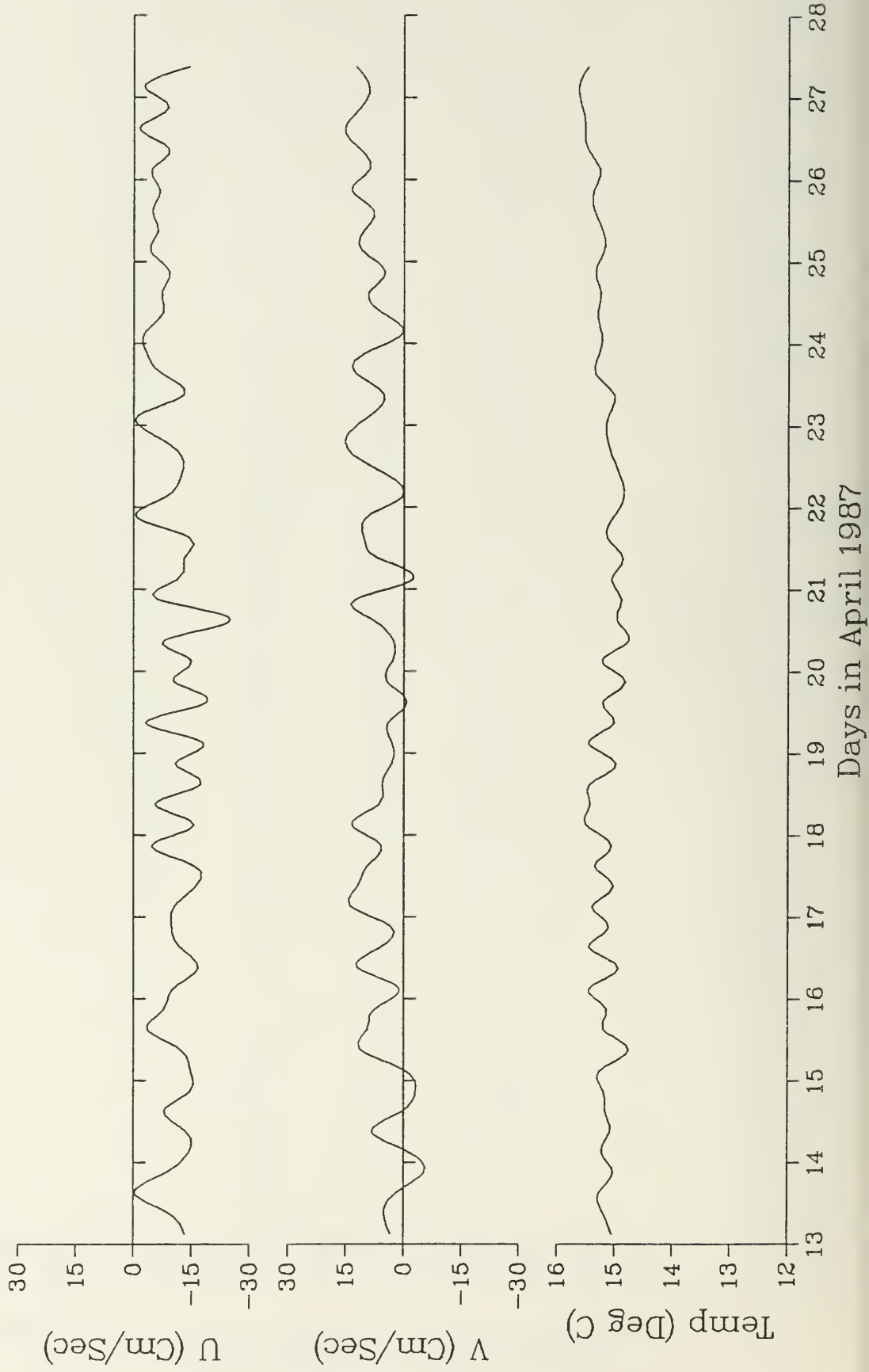


FIGURE 5.4

V14

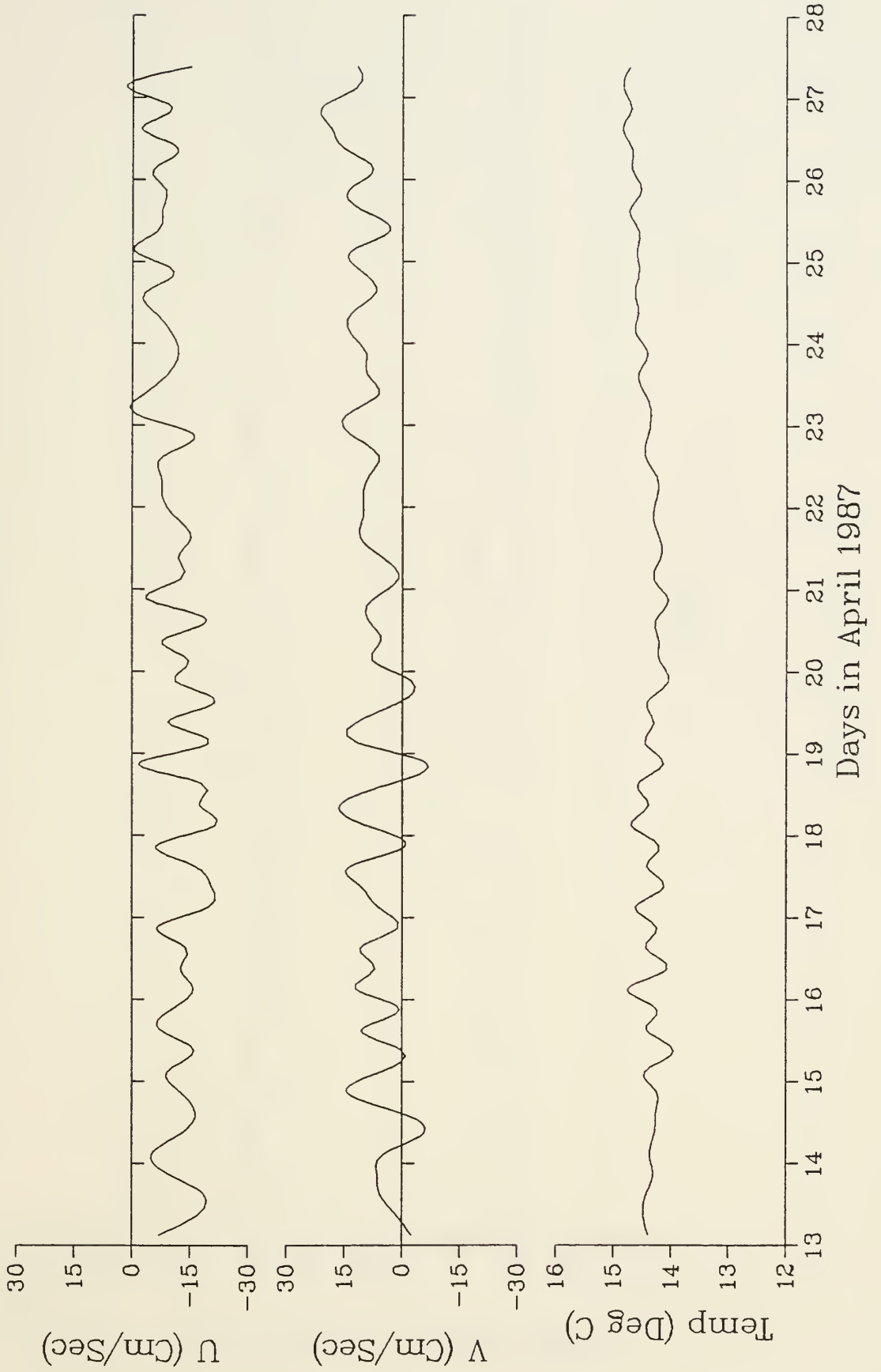


FIGURE 5.5

V15

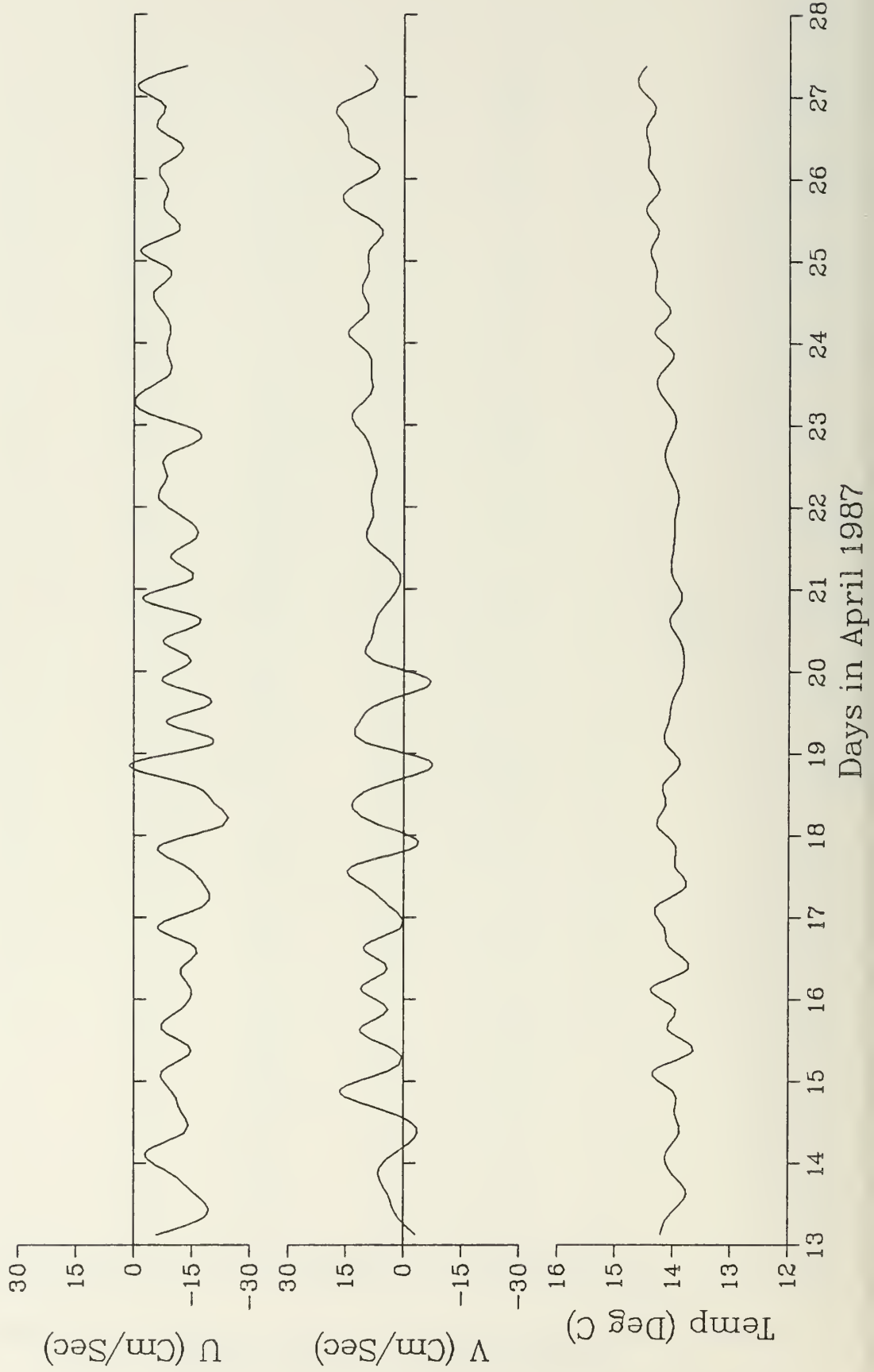


FIGURE 5.6

V23

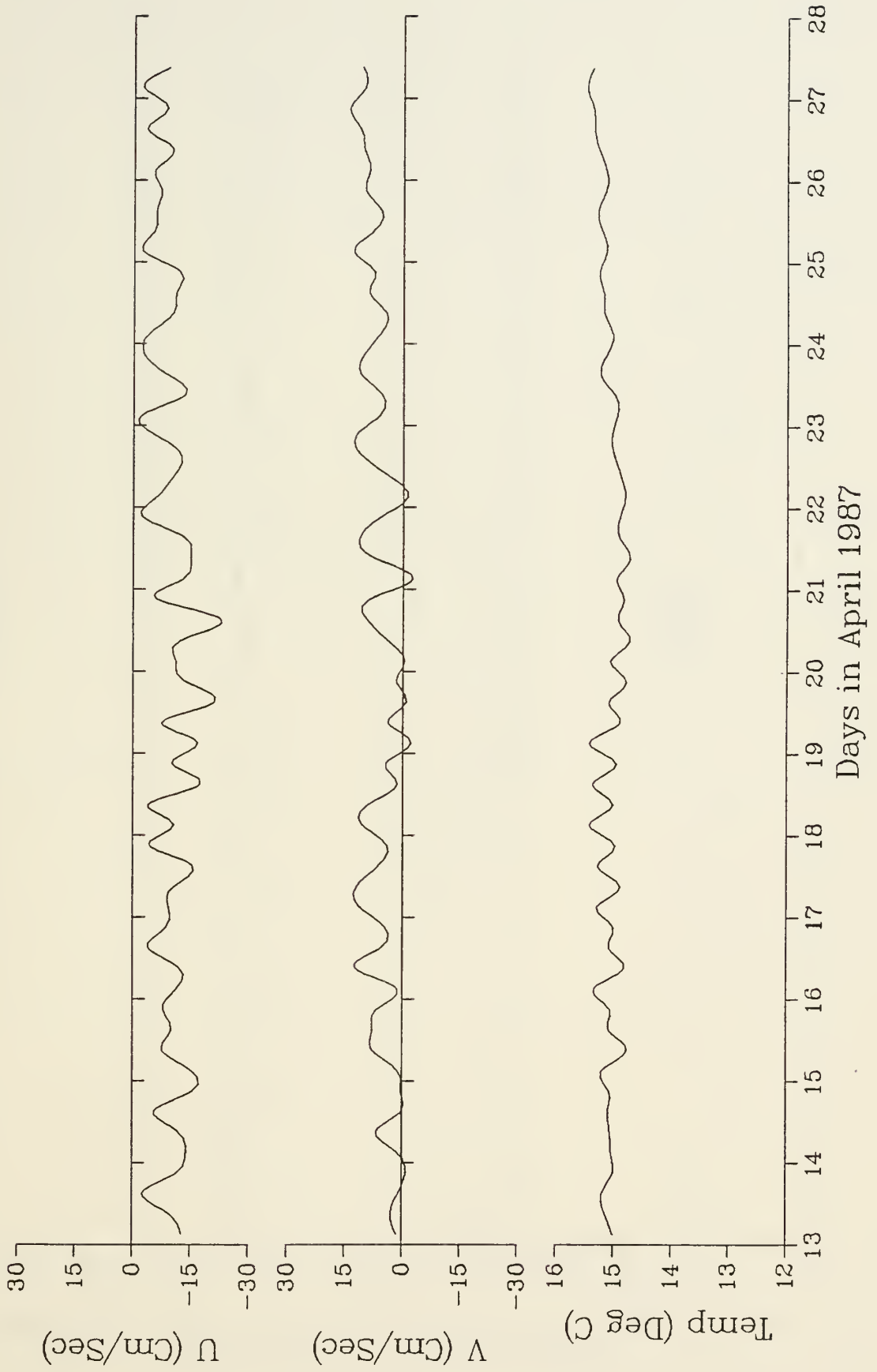


FIGURE 5.7

V25

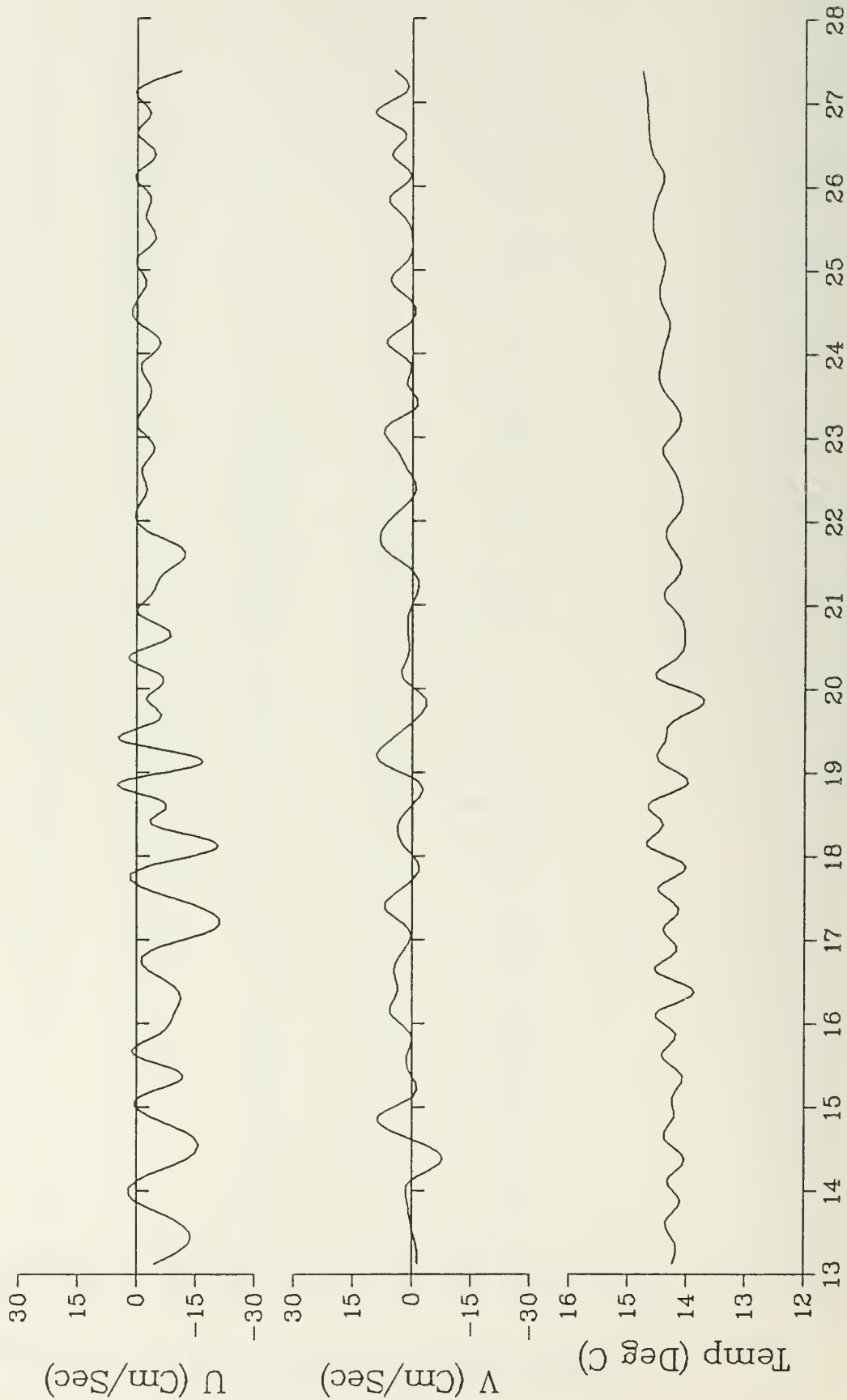
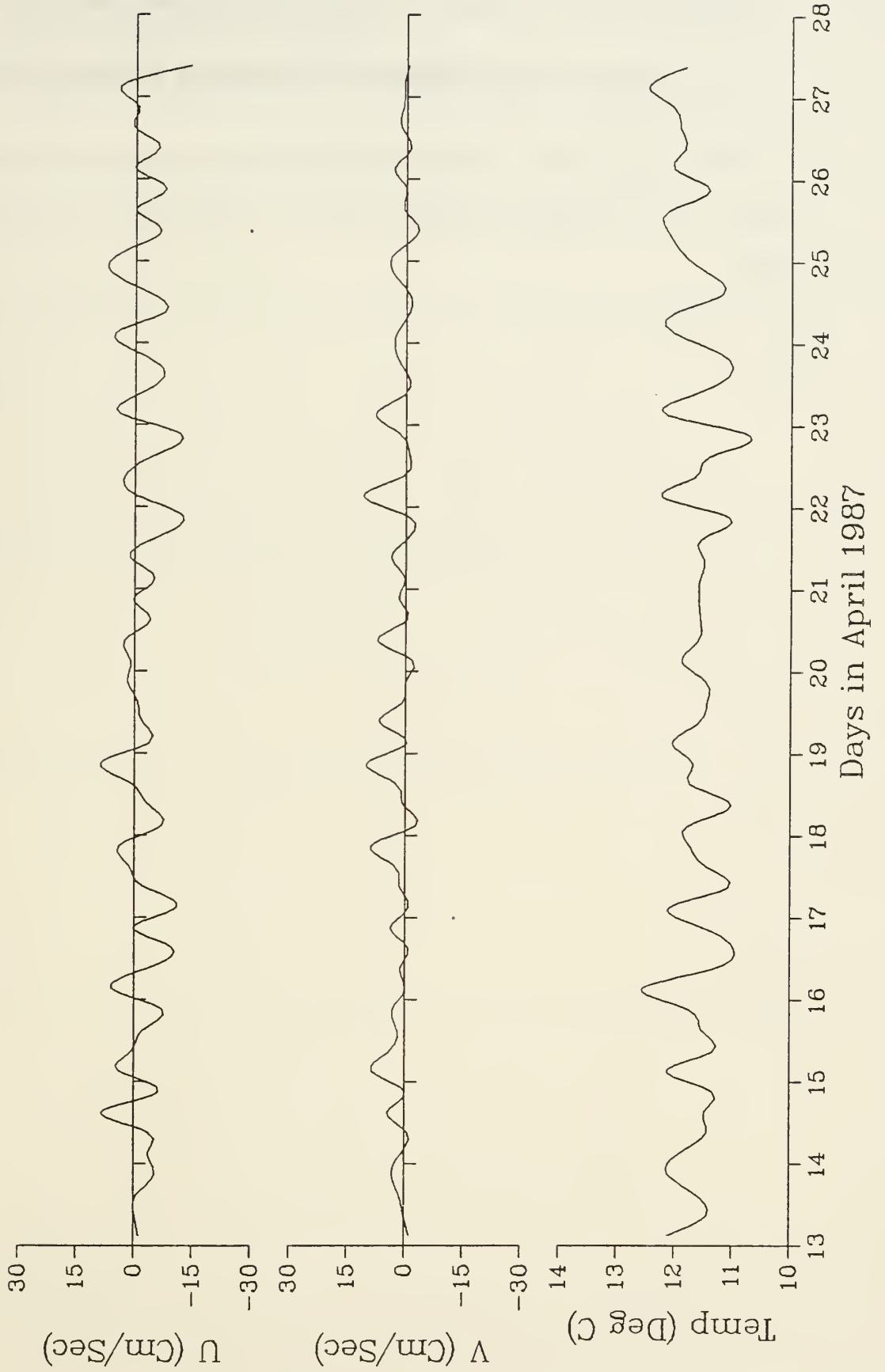


FIGURE 5.8

V26



6. Low Pass Filtered Mooring Composites

The low pass filtered velocity component and temperature time series presented in section 5 are composited separately in Figure 6 on page 63 for moorings 87V1 and 87V2.

Figure 6. Figures 6.1 - 6.3: Low pass filtered velocity components and temperature time series composited for mooring 87V1. Figures 6.4 - 6.6: Same time series composited for mooring 87V2.

87V1 COMPOSITE

U (Cm/Sec)

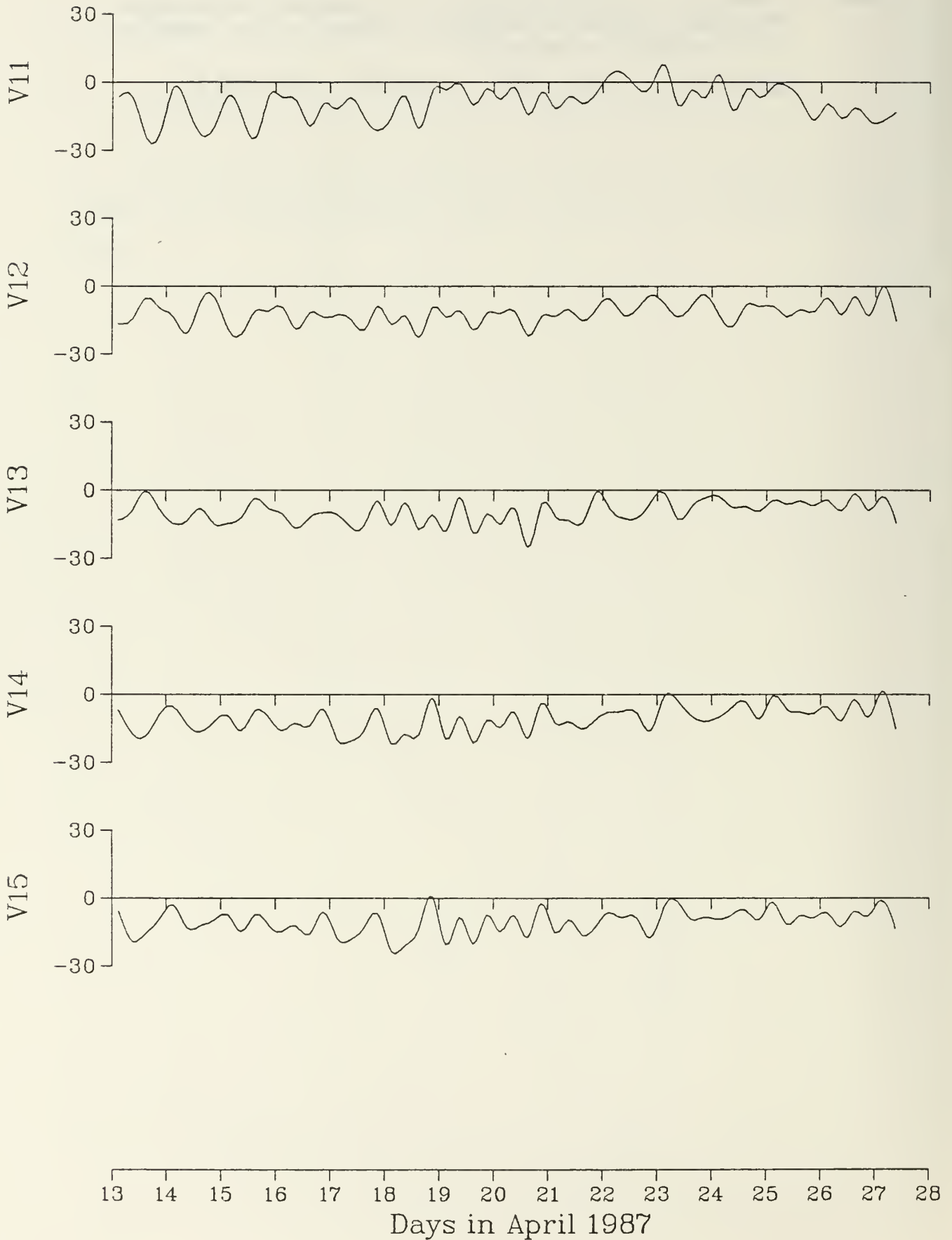
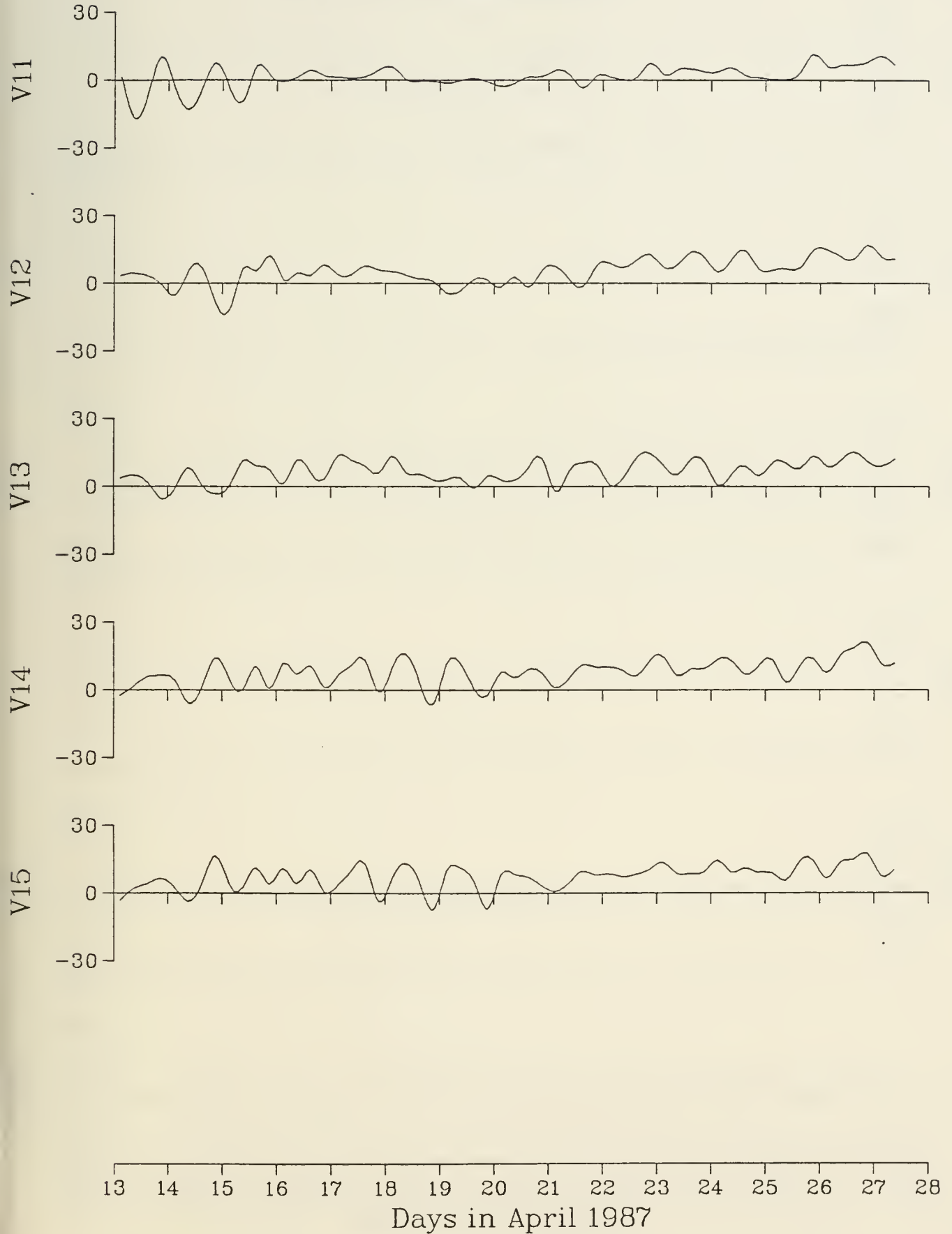


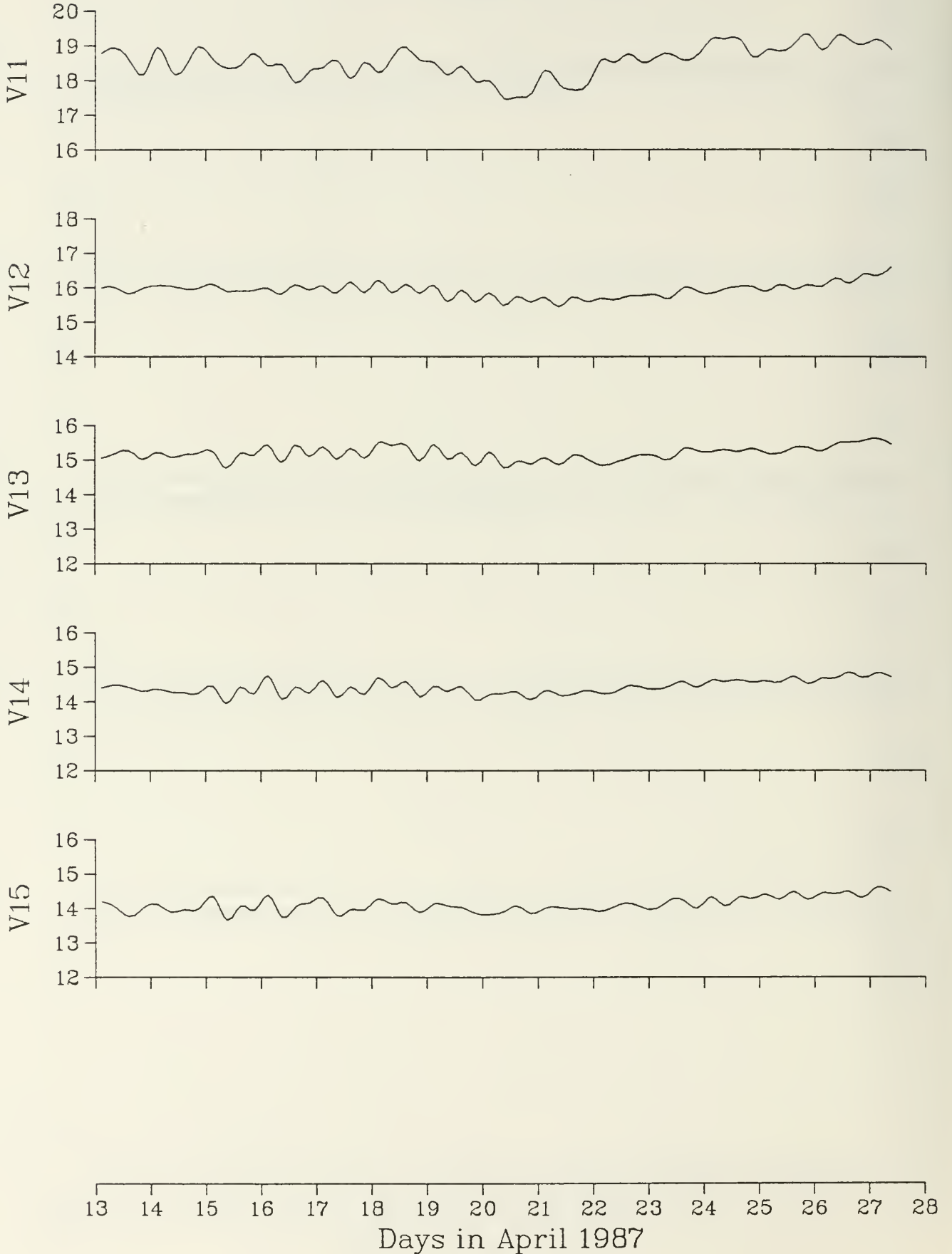
FIGURE 6.2

87V1 COMPOSITE

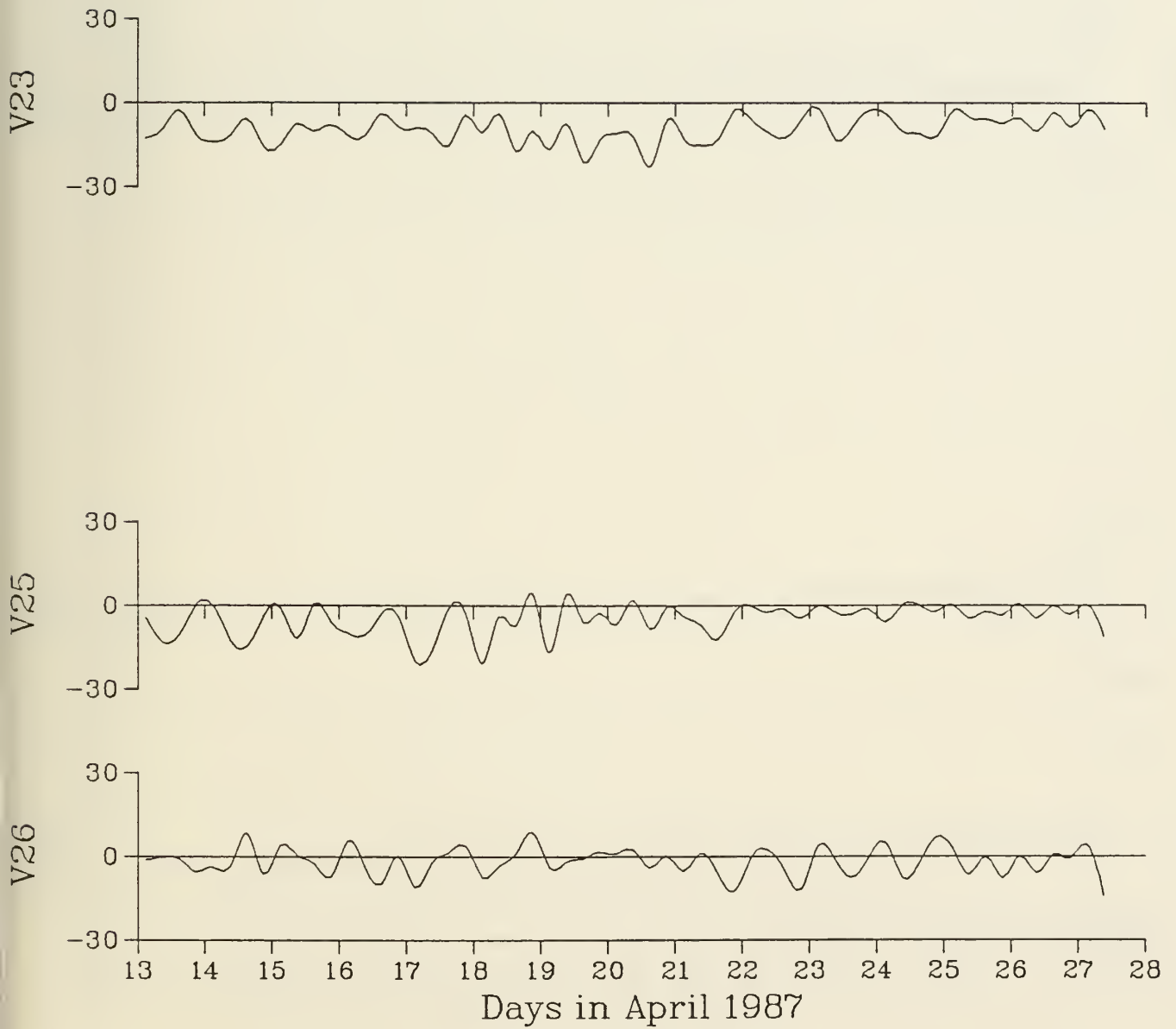
V (Cm/Sec)



87V1 COMPOSITE Temperature (Deg C)

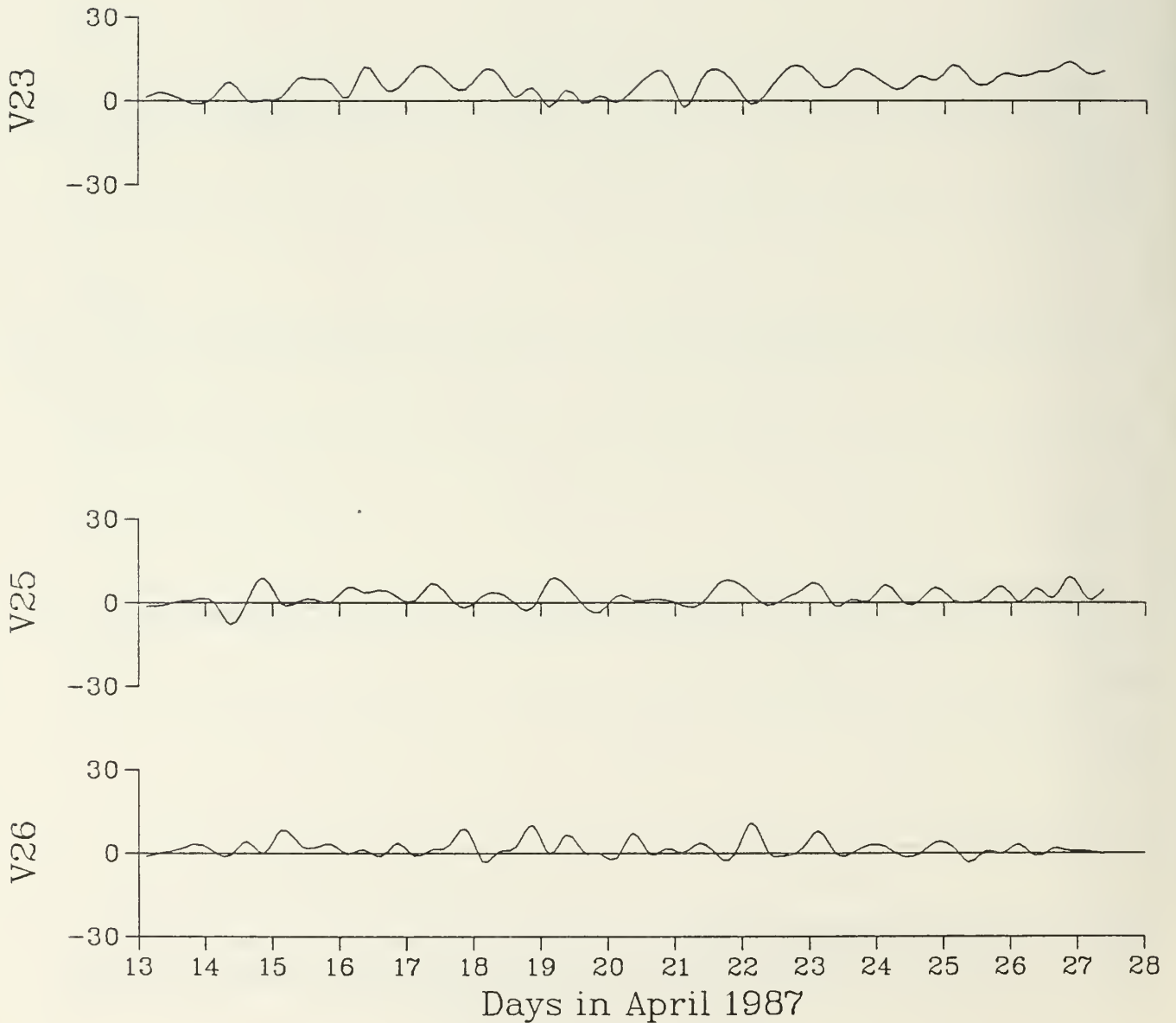


87V2 COMPOSITE
U (Cm/Sec)

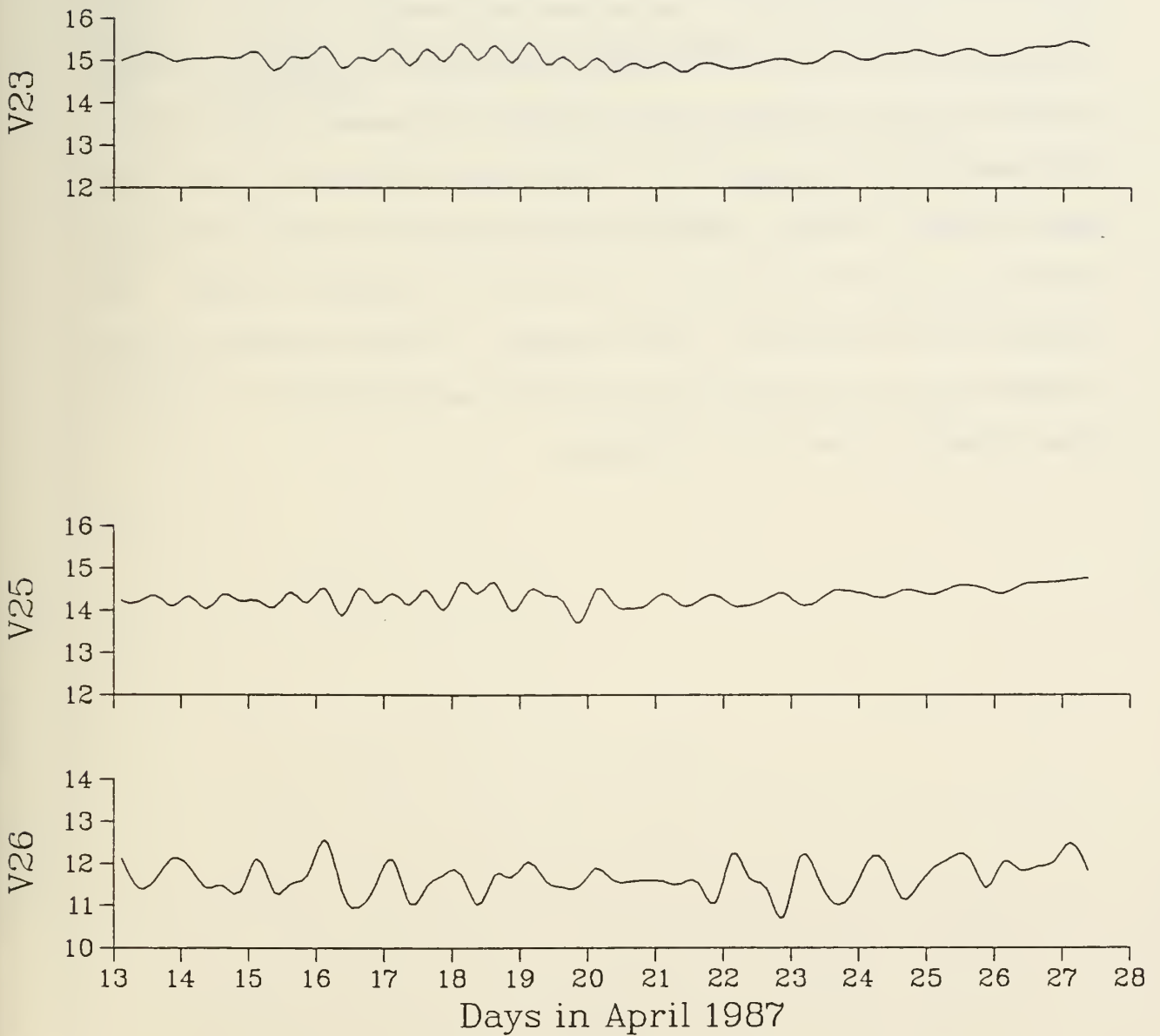


87V2 COMPOSITE

V (Cm/Sec)



87V2 COMPOSITE Temperature (Deg C)



7. Variance Density Spectra

The velocity and temperature variance spectra for the time series presented in section 3 are given in Figure 7 on page 72. The data were first truncated to the time window of 2330 12 April 1987 to 1330 27 April 1987 and were then broken up into seven 50-hour windows. The time series for each 50-hour window was demeaned and multiplied by a ten percent cosine taper function. The cosine tapered windows were then transformed using the FFTRC International Statistics and Mathematics Library (IMSL) routine. The variances from the 7 windows were then summed to increase the degrees of freedom to 14, and the sums were divided by 0.86 to correct for tapering. To decrease the noise in the higher frequency ranges, independent block averages of three band intervals were applied in the range from 0.5 C.P.H. (cycles per hour) to 2.0 C.P.H. for 42 degrees of freedom. Similarly, independent block averages of five band intervals were applied in the range from 2.02 C.P.H. to 6.0 C.P.H. for 70 degrees of freedom. The variances for the data are shown in Table 4 on page 71. The 90% confidence intervals for random errors were calculated based upon the chi-squared distribution with the given degrees of freedom and are shown in the figures.

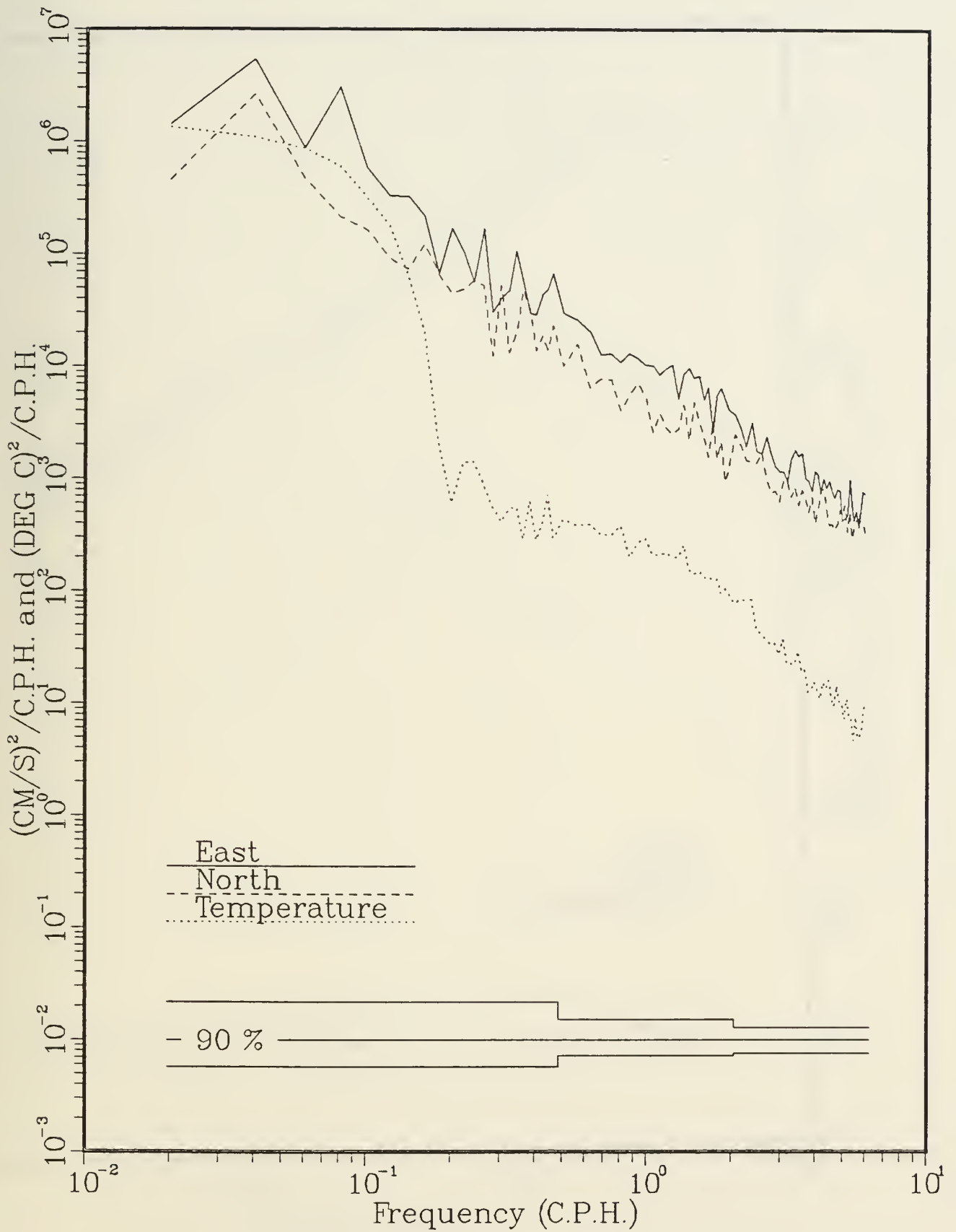
| Current Meter | East (Cm/Sec) ² | North (Cm/Sec) ² | Temperature (Deg C) ² |
|---------------|-------------------------------|--------------------------------|-------------------------------------|
| V11 | 79.14 | 29.05 | 25.19 |
| V12 | 47.51 | 31.06 | 18.44 |
| V13 | 48.18 | 35.56 | 16.77 |
| v14 | 67.47 | 43.61 | 15.05 |
| v15 | 70.24 | 45.17 | 14.36 |
| v23 | 37.97 | 24.18 | 16.50 |
| v25 | 50.81 | 21.91 | 14.91 |
| v26 | 69.83 | 32.65 | 9.98 |

Table 4. Variances of the velocity components and temperature

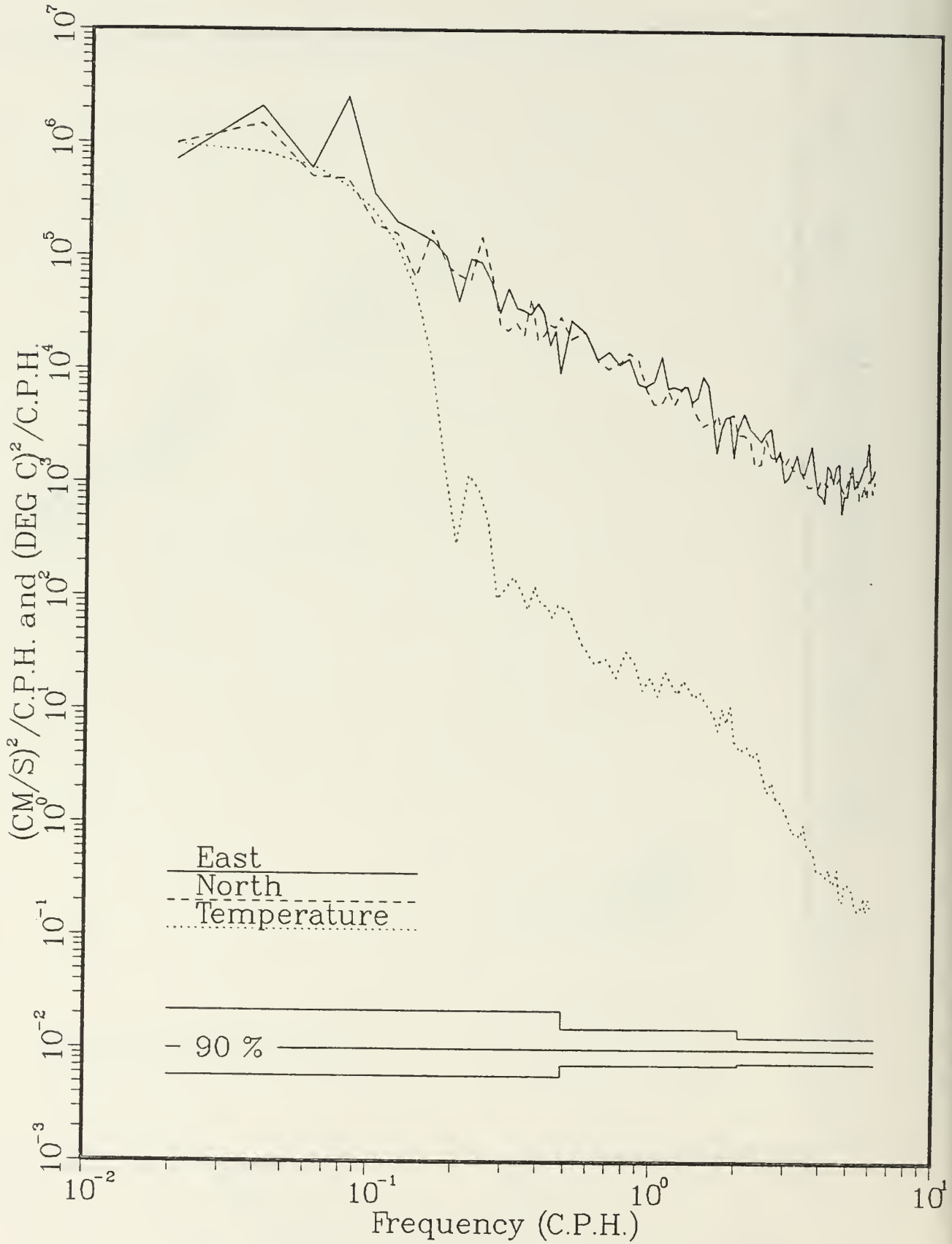
Figure 7. Figures 7.1 - 7.8: Velocity component and temperature variance density spectra.



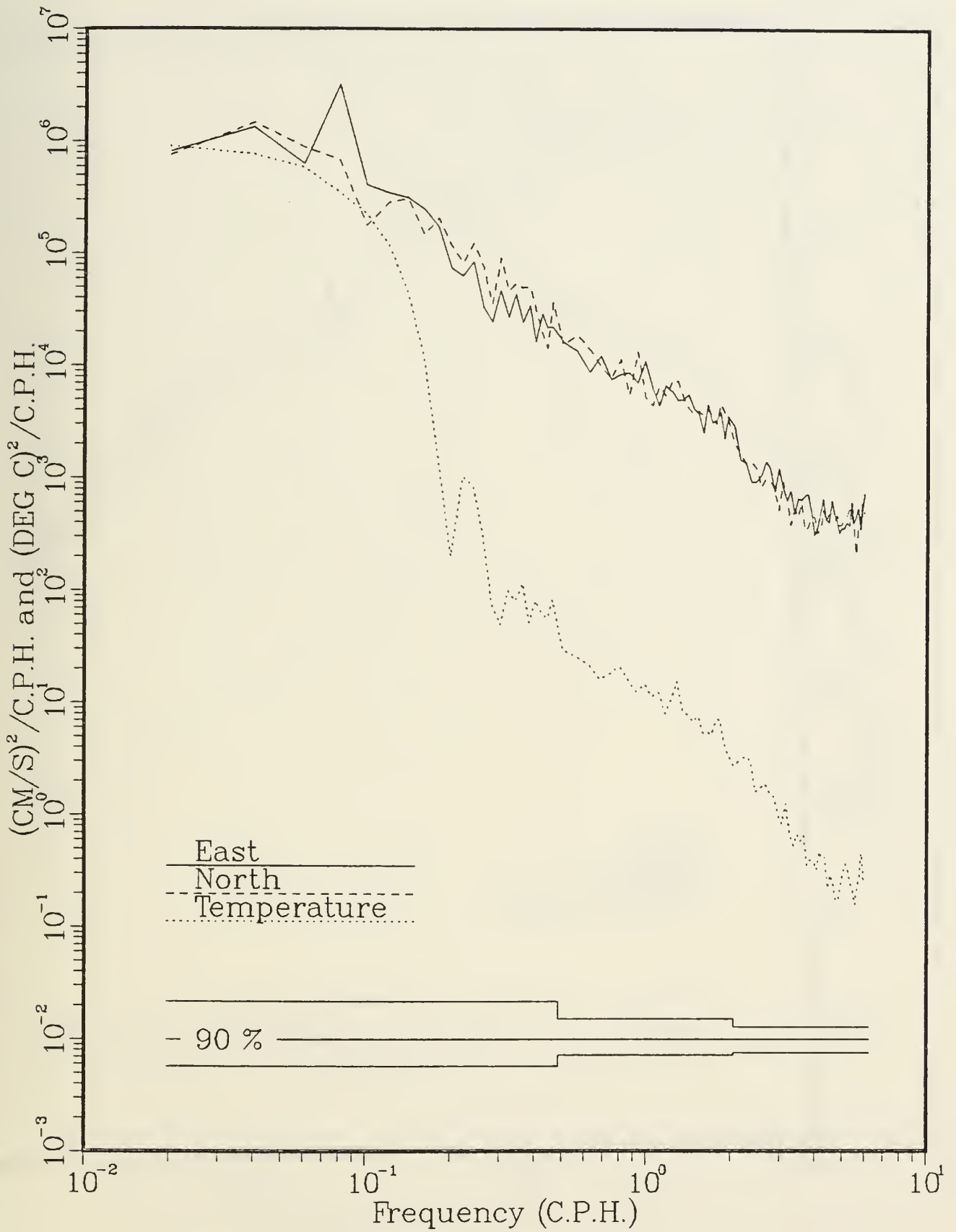
V11



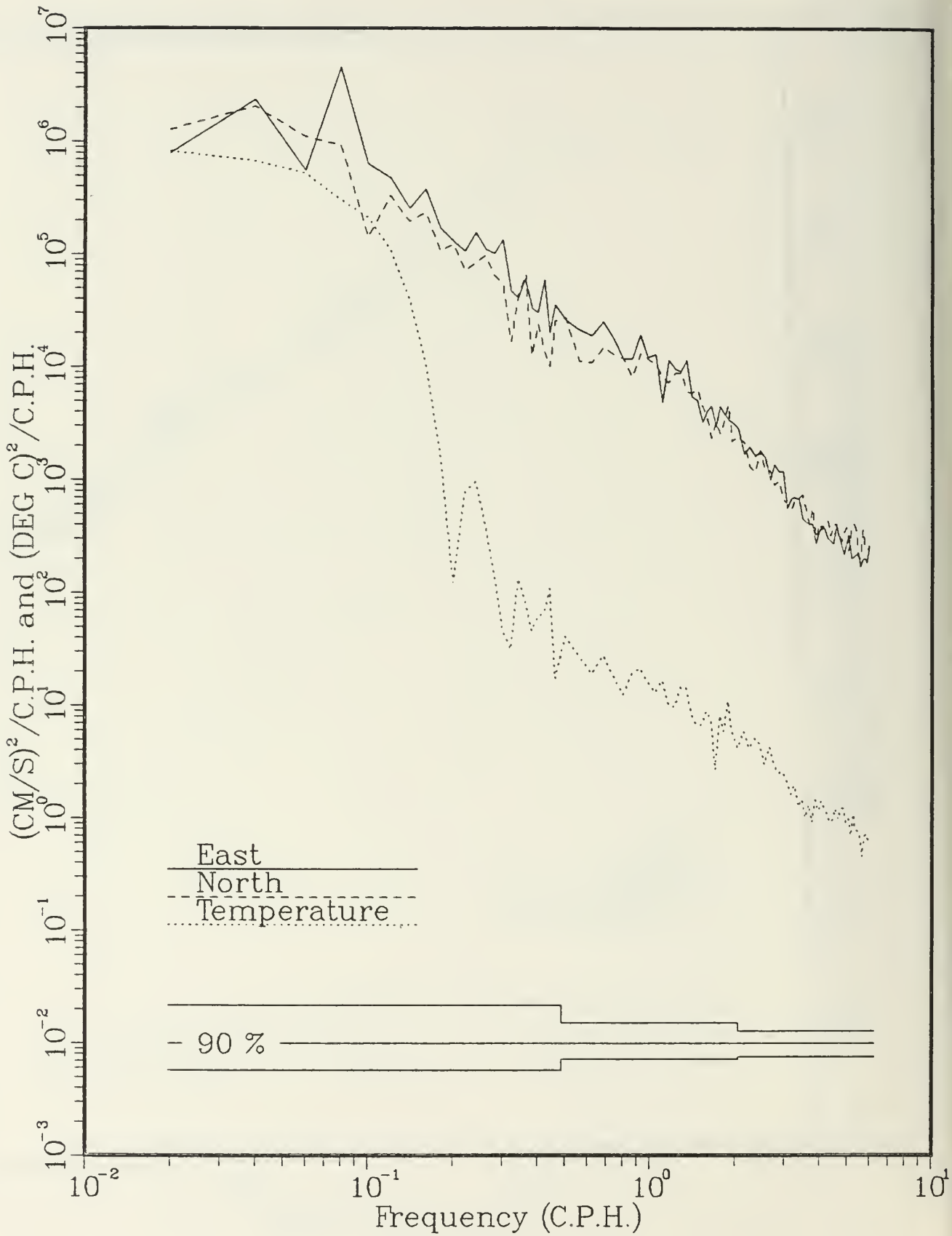
V12



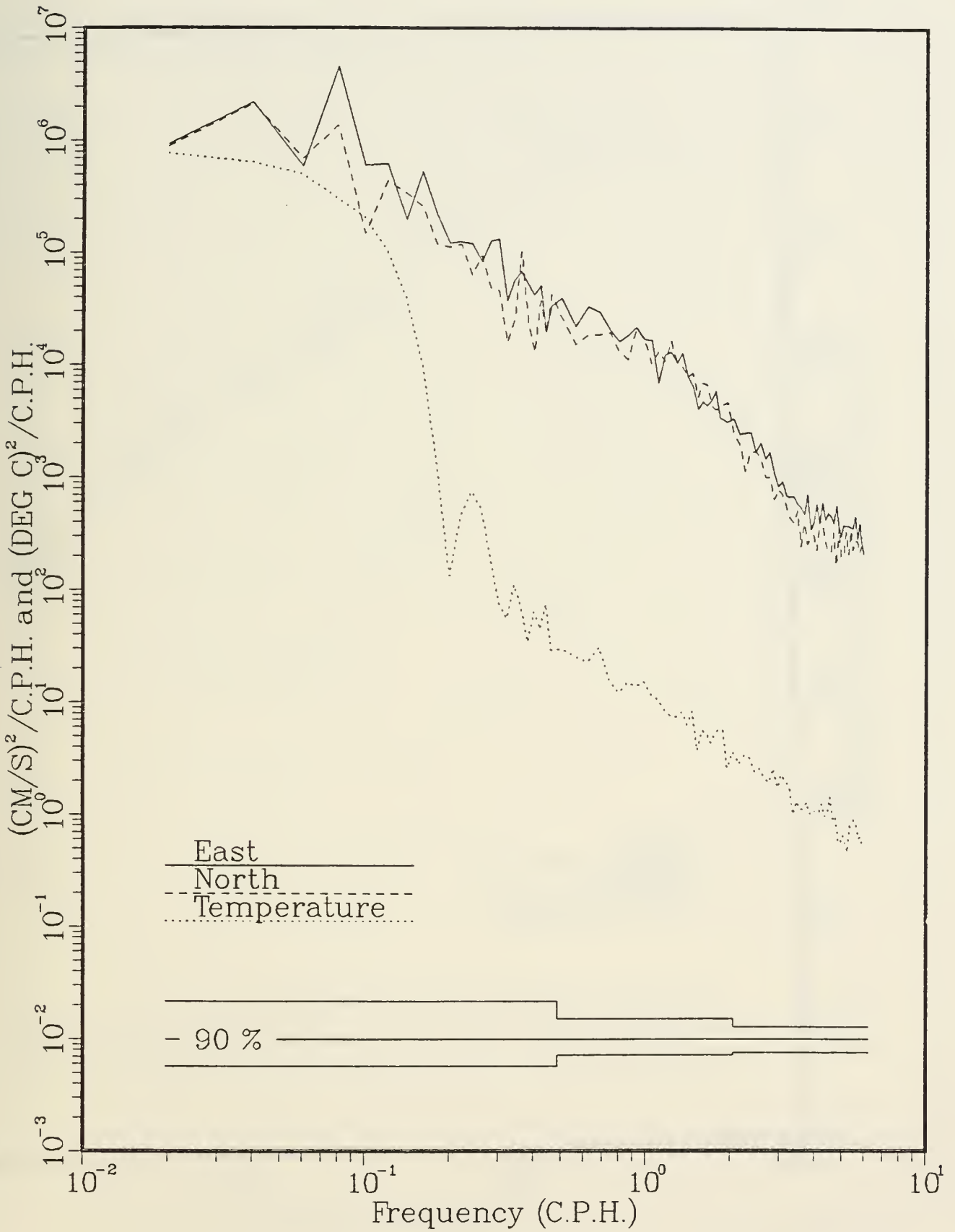
V13



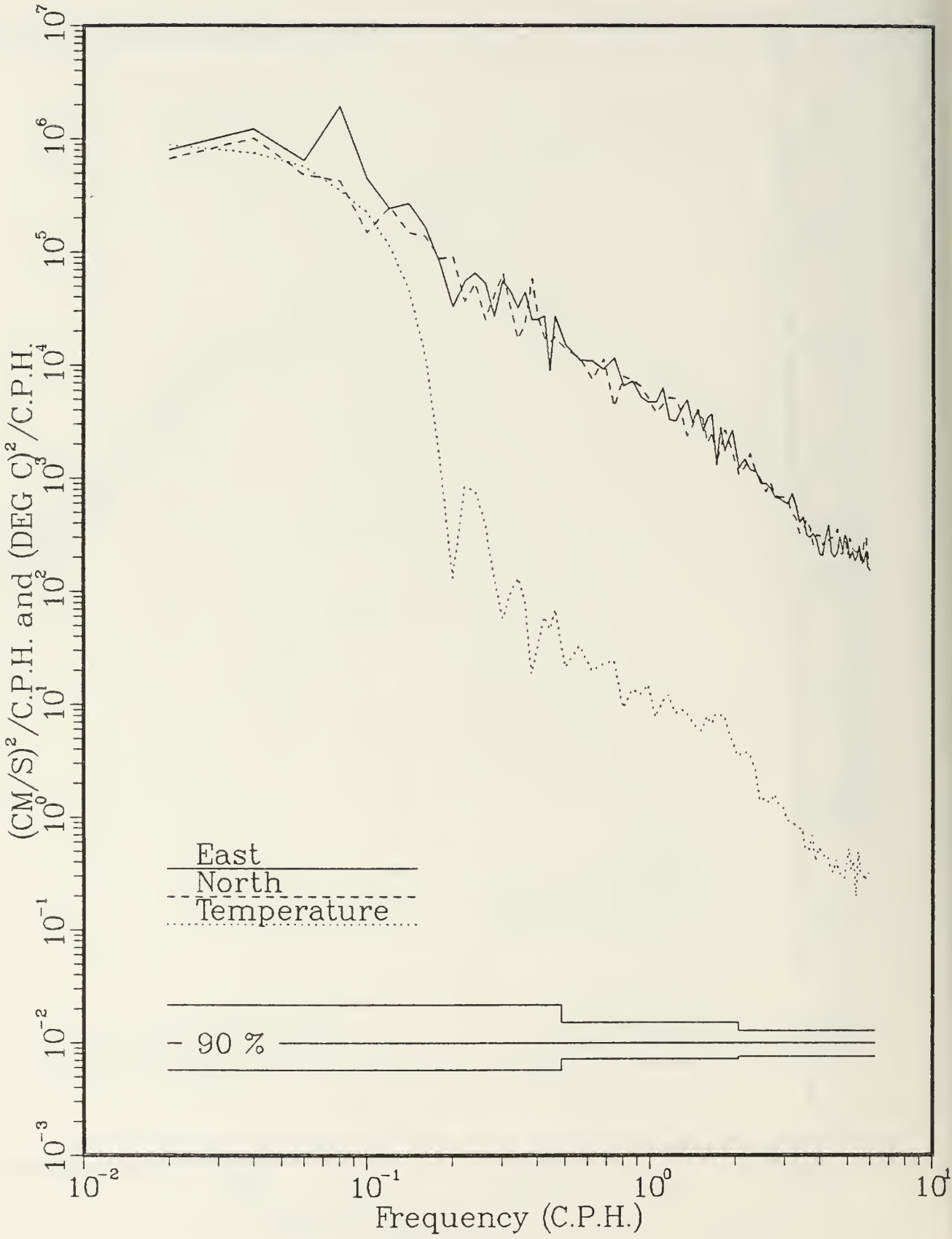
V14



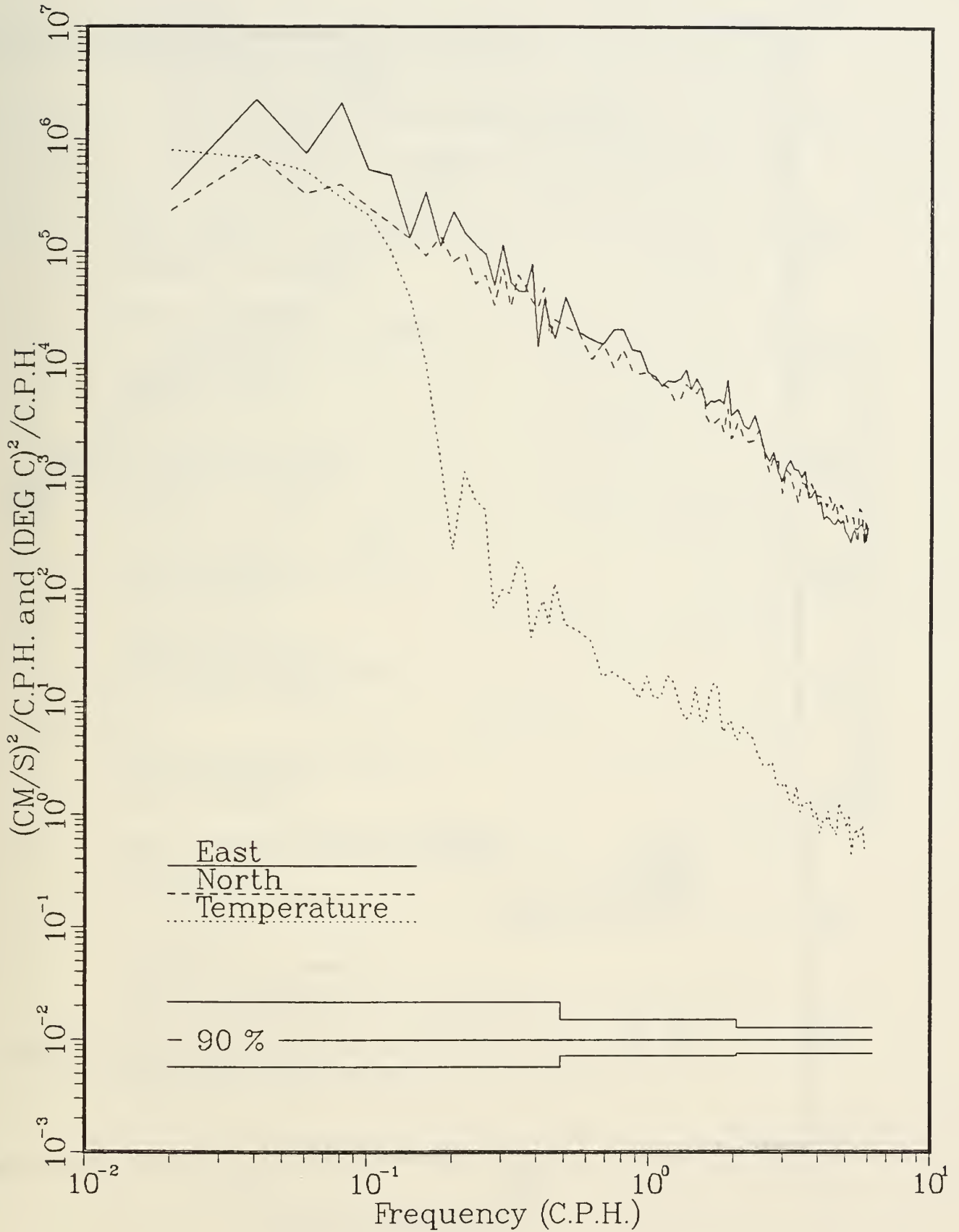
V15



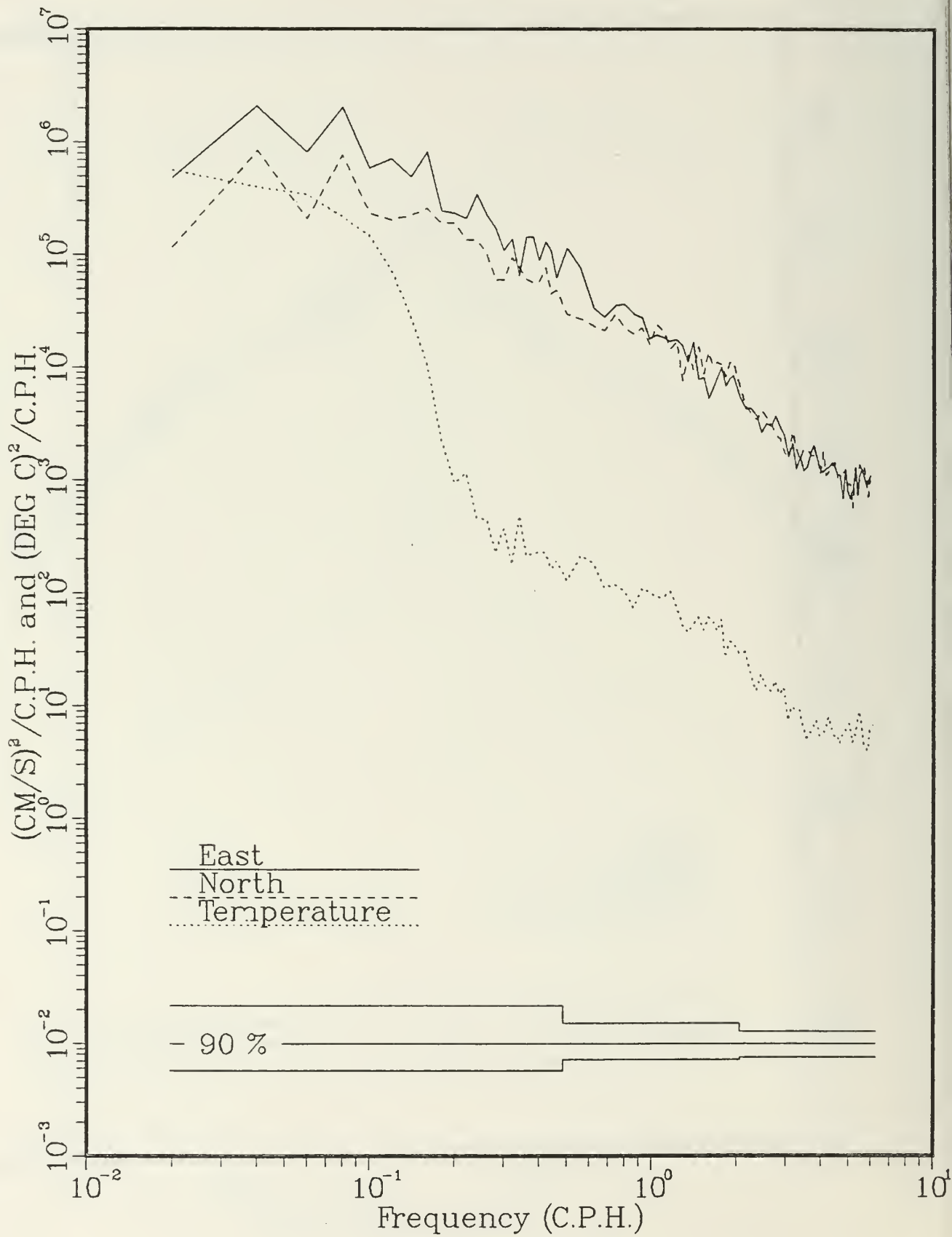
V23



V25



V26



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