
Reports

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Strata Formation on Margins (STRATAFORM) G-60 Site Benthic Boundary Layer Tripod Data Report, November 1996 - January 1997

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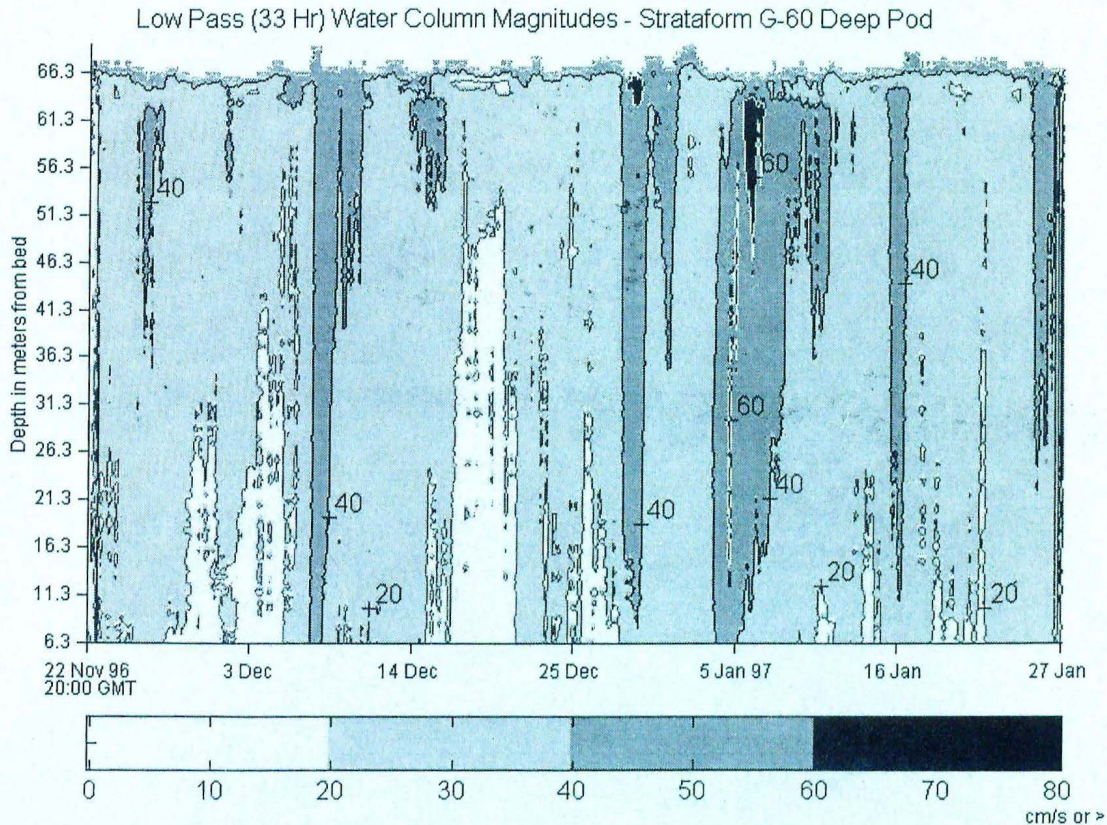
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**Strata Formation on Margins (STRATAFORM) G-60 Site
Benthic Boundary Layer Tripod Data Report,
November 1996 - January 1997**

D.A. Hepworth, C.T. Friedrichs, and L.D. Wright



Special Report in Applied Marine Science and Ocean Engineering No. 344

School of Marine Science
Virginia Institute of Marine Science
College of William and Mary
Gloucester Point, VA 23062

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no. 344
c. 2

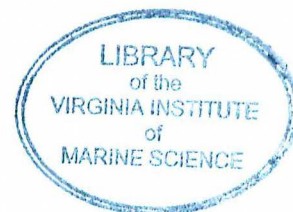
October 1997

search sponsored by the Marine Geology and Geophysics Program of the Office of
l Research, Grant N00014-95-1-0391 as a component of the STRATAFORM Project

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1. Introduction

During the period November 1996 - January 1997 five VIMS scientists and technicians participated in the field component of STRATAFORM. The objective was to deploy and recover two instrumented tripods, one at the G-30 site and one at the G-60 site. The participants in the VIMS field component were: Franklin Farmer, Robert Gammisch, Daniel Hepworth, Todd Nelson, and Wayne Reisner.

2. Tripod Deployments

The tripods were deployed to obtain estimates of time-varying bed stress over contrasting bottom types at two sites and to evaluate sediment resuspension in response to those stresses. Secondly, the instruments were intended to add data on waves and mean currents for use by all STRATAFORM investigators.

Instrumentation

The two tripods deployed by VIMS were similar in configuration and rigged primarily to collect benthic boundary layer profiles of velocity and suspended sediment concentration as well as to provide general information on waves and mean currents. The five main instruments on each tripod were designated as the 635, 626, OBS, ADV, and an upward looking water column velocity profiler. The G-30 tripod carried a 635 with a single electromagnetic Marsh-McBirney velocity sensor and a Paroscientific pressure gage located at elevations of 134 and 244 cm above the bed respectively. The 626 collected velocity profiles using four Marsh-McBirney sensors at 12, 42, 73, and 103 cm and pressure at 249 cm above the bed. The OBS used five Downing infrared optical backscatter sensors for suspended sediments profile determination at 12, 30, 48, 63, and 73 cm above the bed. At G-60, the 635 velocity sensor was at 134 cm and the pressure gage at 205 cm above the bed. The 626 velocity sensors were at 12, 43, and 72 cm (only three sensors) and pressure at 251 cm and OBS sensors at 13, 32, 42, 63, and 73 cm above the bed. All of these instruments were programmed to record data every 4 hours and collect 2048 samples at 1 second intervals (approx. 34 minutes of data). The ADV on the G-30 pod measured three-component velocity (xyz) at a point 24 cm above the bed. The ADV on the G-60 pod sampled the velocity at 21 cm above the bed. These instruments were programmed to record data every 4 hours and collect 3500 samples at 0.2 second intervals (approx. 12 minutes of data). A Sontek Acoustic Doppler Profiler was mounted on the G-30 pod about 2.5 meters above the bed. It was programmed to make water column profiles every 8 minutes with 0.5 meter resolution. A RDI Acoustic Doppler Current Profiler mounted on the G-60 pod at 2.6 meters above the bed was programmed to collect profiles every 30 minutes with 0.5 meter resolution. Profiles started at about 6 meters above the bed.

Ship's Log

The VIMS tripod was assembled and ready for deployment on November 20, 1996. On November 21, 1996 the *F/V Warrior II* arrived at Fields Landing (Eureka, CA) to load both of the VIMS pods and one United States Geological Survey (USGS) pod. A problem

with the USGS pod precluded any deployments that day, but the next day all three pods were deployed. The G-30 pod was deployed at 40° 41.42' N, 124° 21.25' W and at a depth of approx. 31 meters and the G-60 pod at 40° 43.36' N, 124° 25.09' W at a depth of about 64 meters.

On January 27, 1997 the *Warrior II* recovered the G-60 pod, however the G-30 pod was not recovered (and has not been recovered as of October 1, 1997). The first figure is a side scan image of what appears to be the just buried hexagonal framework surrounding the logger canisters of the G-30 pod. The second figure shows the recovered G-60 pod strapped to the deck of the *F/V Warrior II* for return to port.

Data Return and Preliminary Processing

From the G-60 pod we retrieved more than 2 months (at 6 bursts a day) of pressure, velocity, and suspended sediment data. The upward looking acoustic water column profiler logged 3170 water column velocity profiles. The ADV did not collect any data.

All of the data are now available for use by other STRATAFORM investigators. The summary data are stored on the 3.5 diskette that accompanies this report. Burst-mean data are also available for this experiment as well as the VIMS 1995 - 1996 component of STRATAFORM at the VIMS STRATAFORM website:

<http://www.vims.edu/physical/strataf/strataform.htm>

The complete data set including measurements within bursts is available to interested parties on CD-ROM.

STRATAFORM (NOV 1996 - JAN 1997)

EURK96B 40 43.357 N 124 25.089 W G-60 POD

Time is GMT

Depth in meters

Pressures in millibars

Velocities in cm/sec (V positive North & U positive East)

Directions in degrees True

Wave Heights in meters

Wave periods in seconds

Sediment concentrations in g/l

Distances in centimeters

Temperature in degrees Celsius

BURST-MEAN SUMMARY FILES

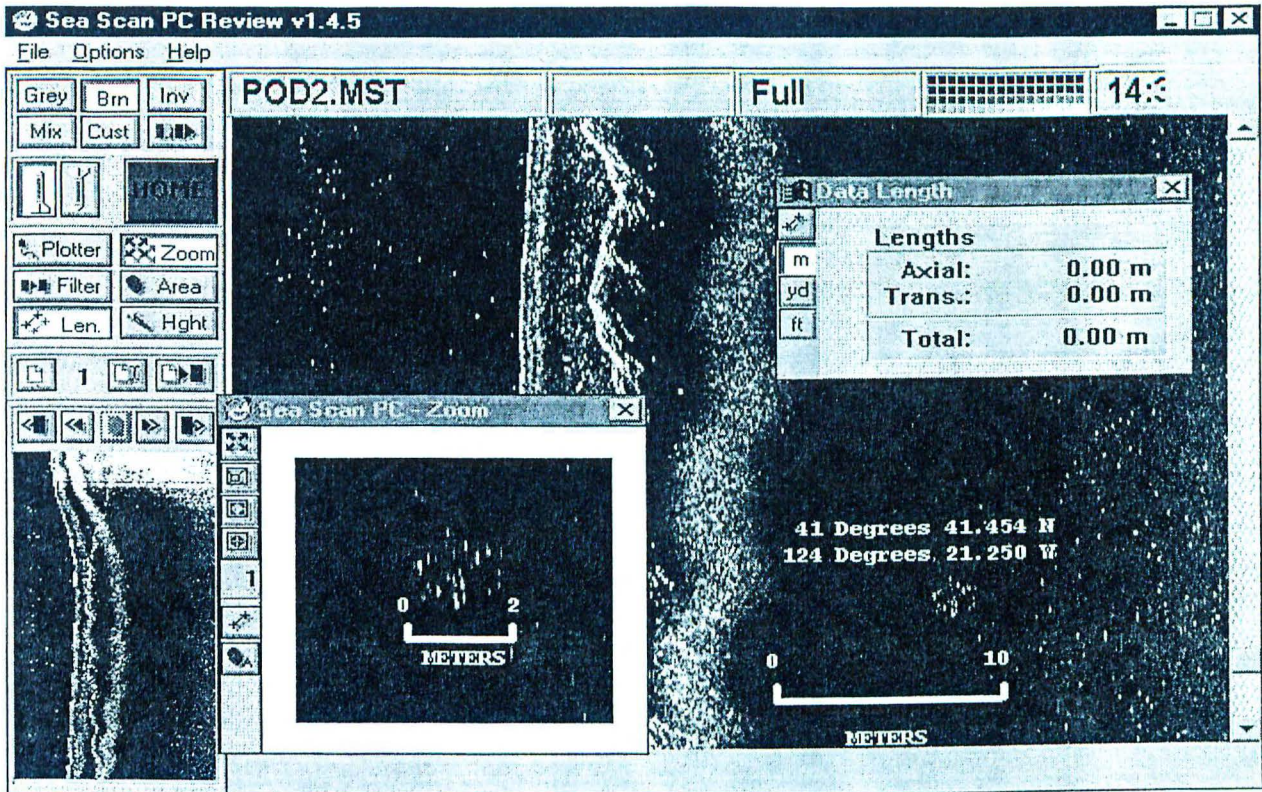
Files are ASCII

Each Burst-Mean Summary File has Two Header Lines:

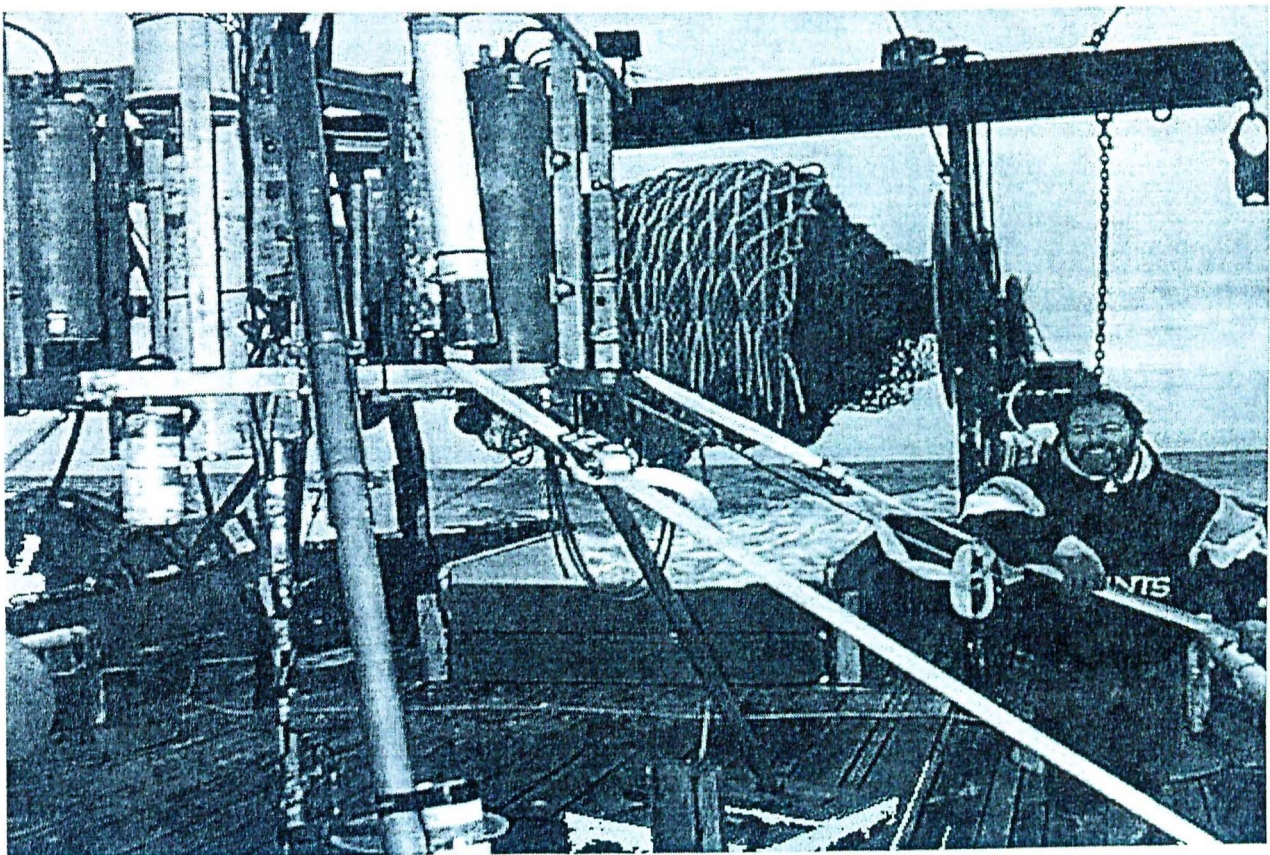
- 1) Type of instrument - deployment - location
- 2) Column headings

For each instrument the columns of data are:

- All
- 1) Burst number
 - 2) Time
 - 3) Date
- 635
- 4) Pressure
 - 5) Mean U
 - 6) Mean V
 - 7) Mean current speed
 - 8) Mean current heading
 - 9) Wave heading
 - 10) Total depth
 - 11) Significant wave height
 - 12) Zero up crossing wave period
 - 13) Maximum U
 - 14) Minimum U
 - 15) Maximum V
 - 16) Minimum V
- 626
- 4) Mean U1 (lowest)
 - 5) Mean V1
 - 6) U2
 - 7) V2
 - 8) U3 (highest)
 - 9) V3
 - 10) Current magnitude 1
 - 11) Mag2
 - 12) Mag3
 - 13) Current direction 1 (heading)
 - 14) Dir2
 - 15) Dir3
- OBS
- 4) Mean concentration 1 (lowest)
 - 5) C2
 - 6) C3
 - 7) C4
 - 8) C5 (highest)
 - 9) Temperature at C1
 - 10) Temperature at C3



Side scan image of G-30 tripod site, May 1997.



G-60 tripod on deck of *F/V Warrior II*, 27 January 1997.

Strataform Data Summary

Station Identification: EURK96B
Duration: November 1996 - January 1997
Instruments & Sensors: 635 velocity and pressure
626 velocity and pressure
OBS suspended sediment & temperature
ADCP water column velocity profile
Sampling Information: Bursts at 4 hour intervals (all except ADCP)
2048 samples at 1 Hz "
Burst duration 34 min 8 sec "
ADCP - 0.5 meter bins to surface every 30 min
Elevations are approximate

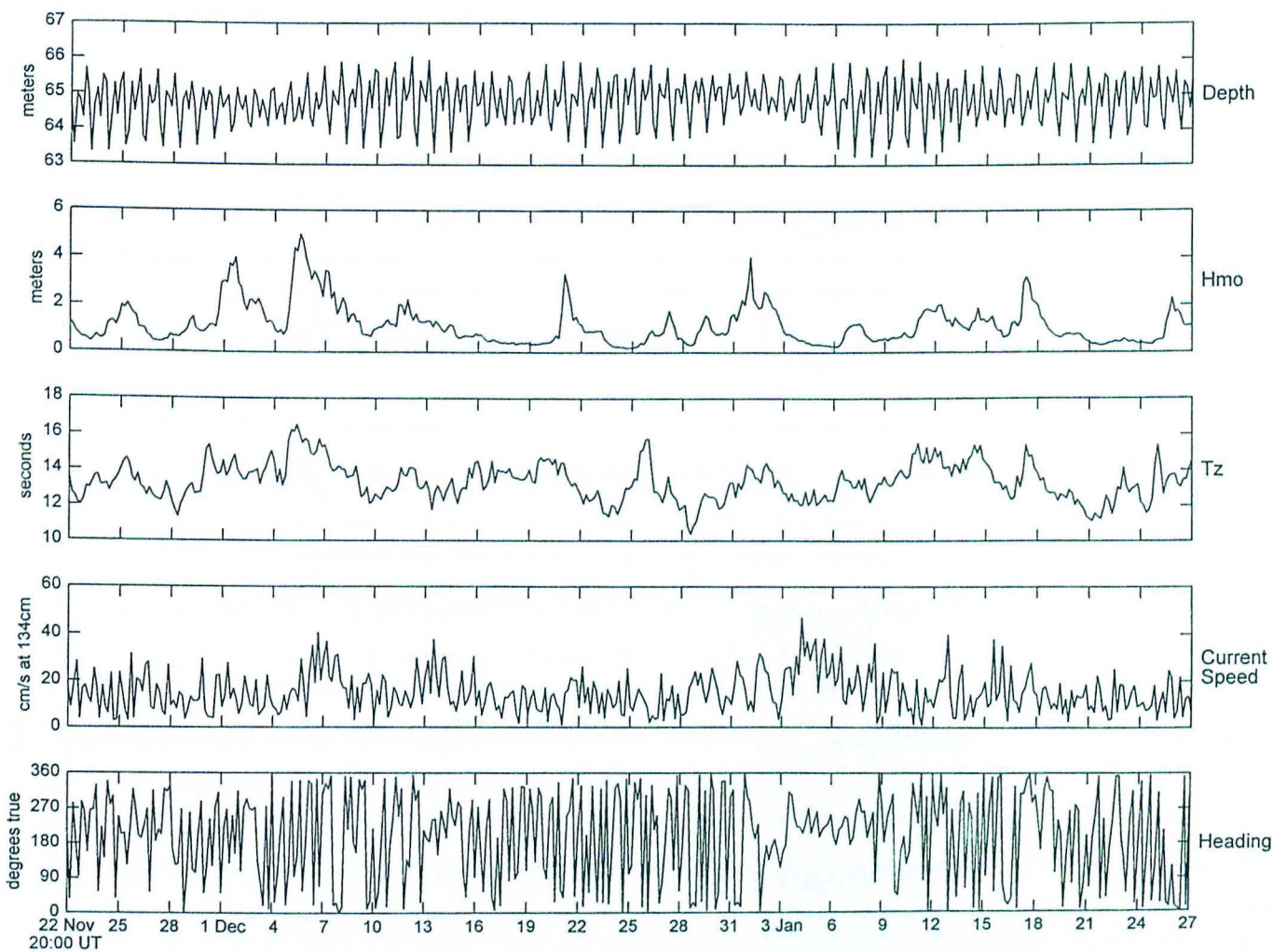
G-60 (65 meters)
40 43.36N 124 25.09W
First Burst: 20:00 GMT 22 November 1996

Sensor	Elevation	# of Bursts	Last Burst
635 velocity	134cm	397	20:00 27 January
pressure	205	"	"
626 vel 1	12	320	00:00 15 January
vel 2	43	"	"
vel 3	72	"	"
pressure	251	"	"
OBS C 1	13	397	20:00 27 January
C 2	32	"	"
C 3	42	"	"
C 4	63	"	"
C 5	73	"	"
ADCP velocity	600 to surface	3170	20:00 27 January

G-30 (30 meters)
40 41.42N 124 21.25W
First Burst: 20:00 GMT 22 November 1996

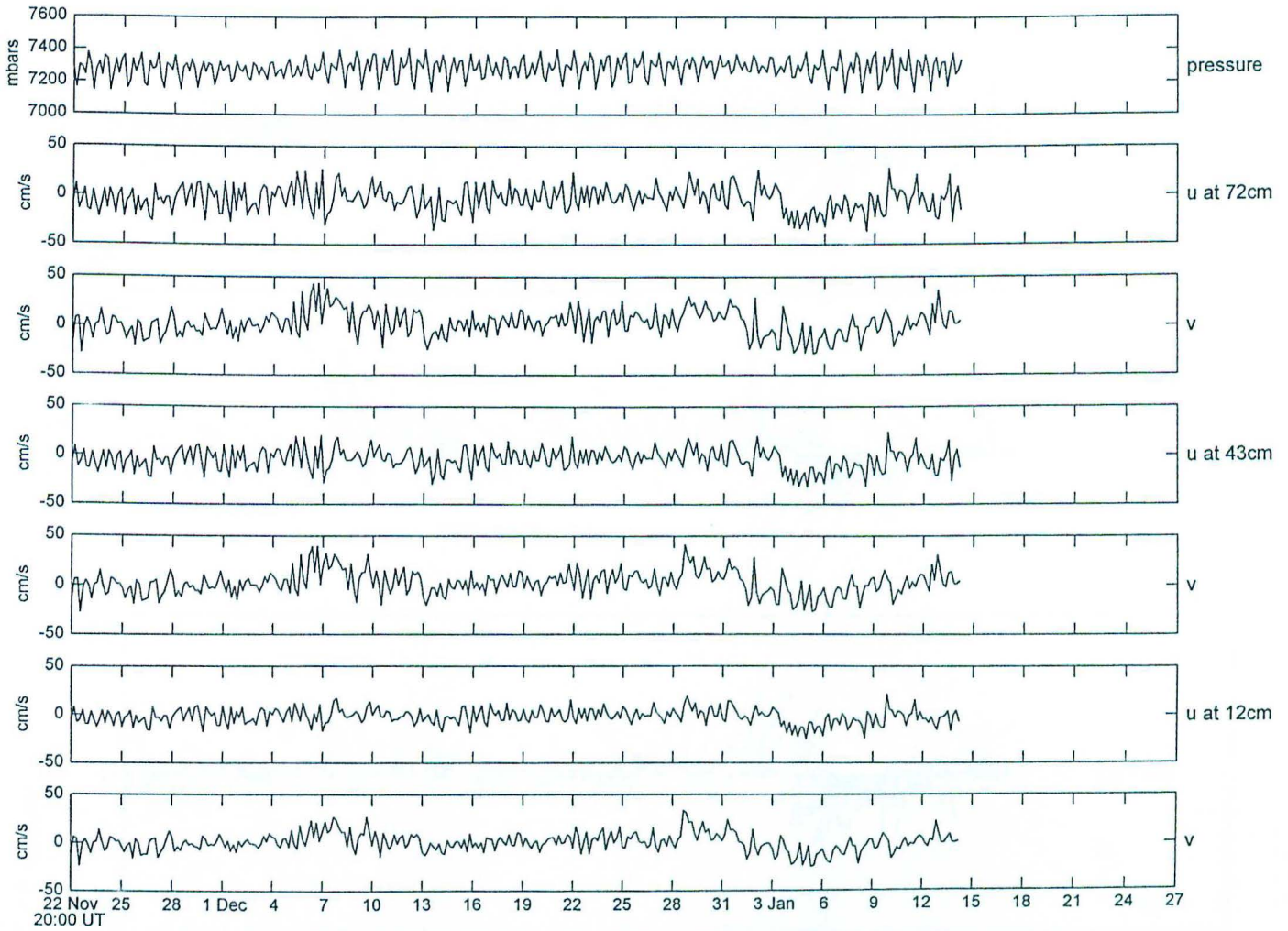
Pod not recovered as of August 1997

635 Data from Strataform G-60 Deep Pod Nov96/Jan97



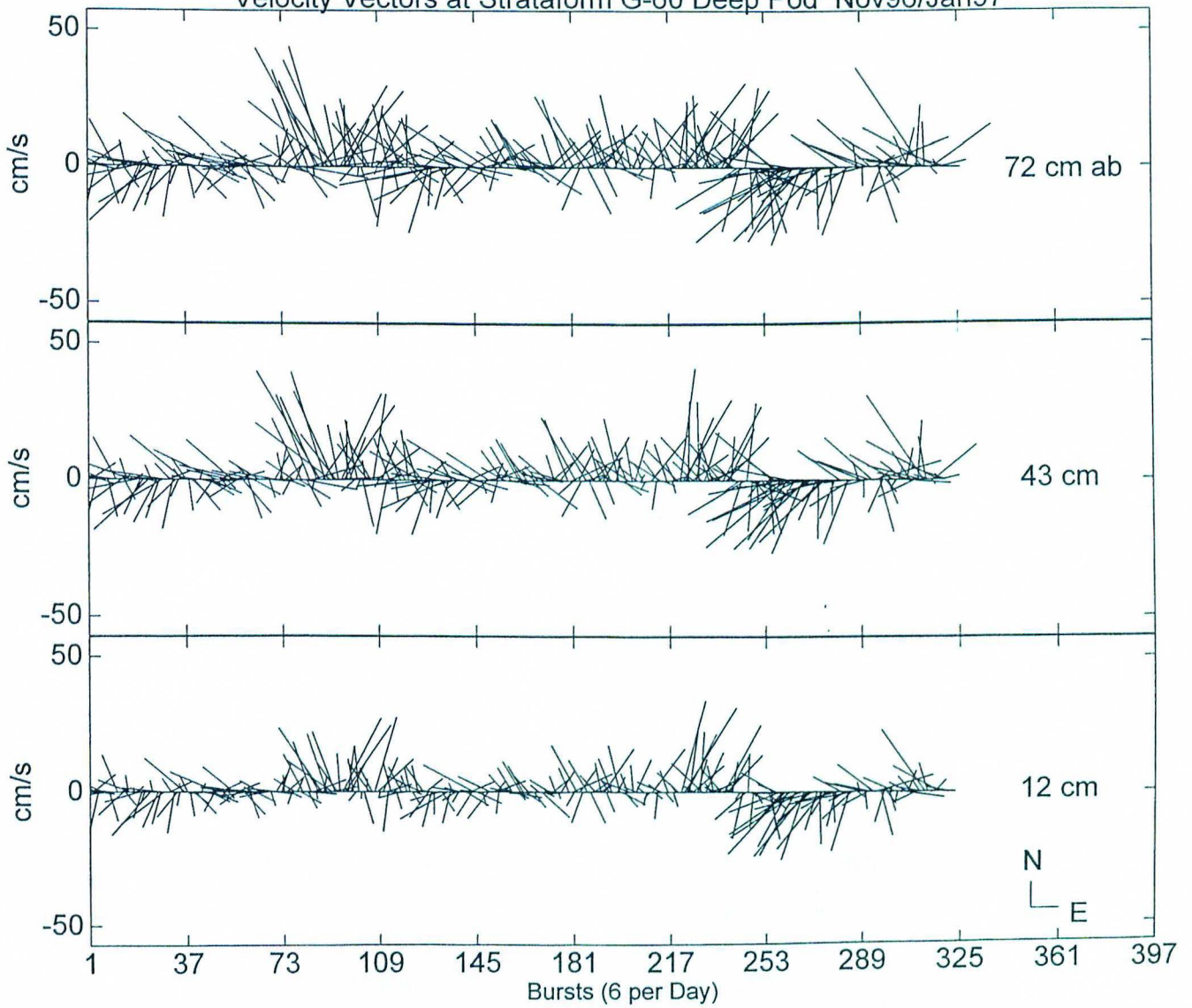
22 November 1996 - 27 January 1997

626 Velocity Profile Data from Strataform G-60 Deep Pod Nov96/Jan97

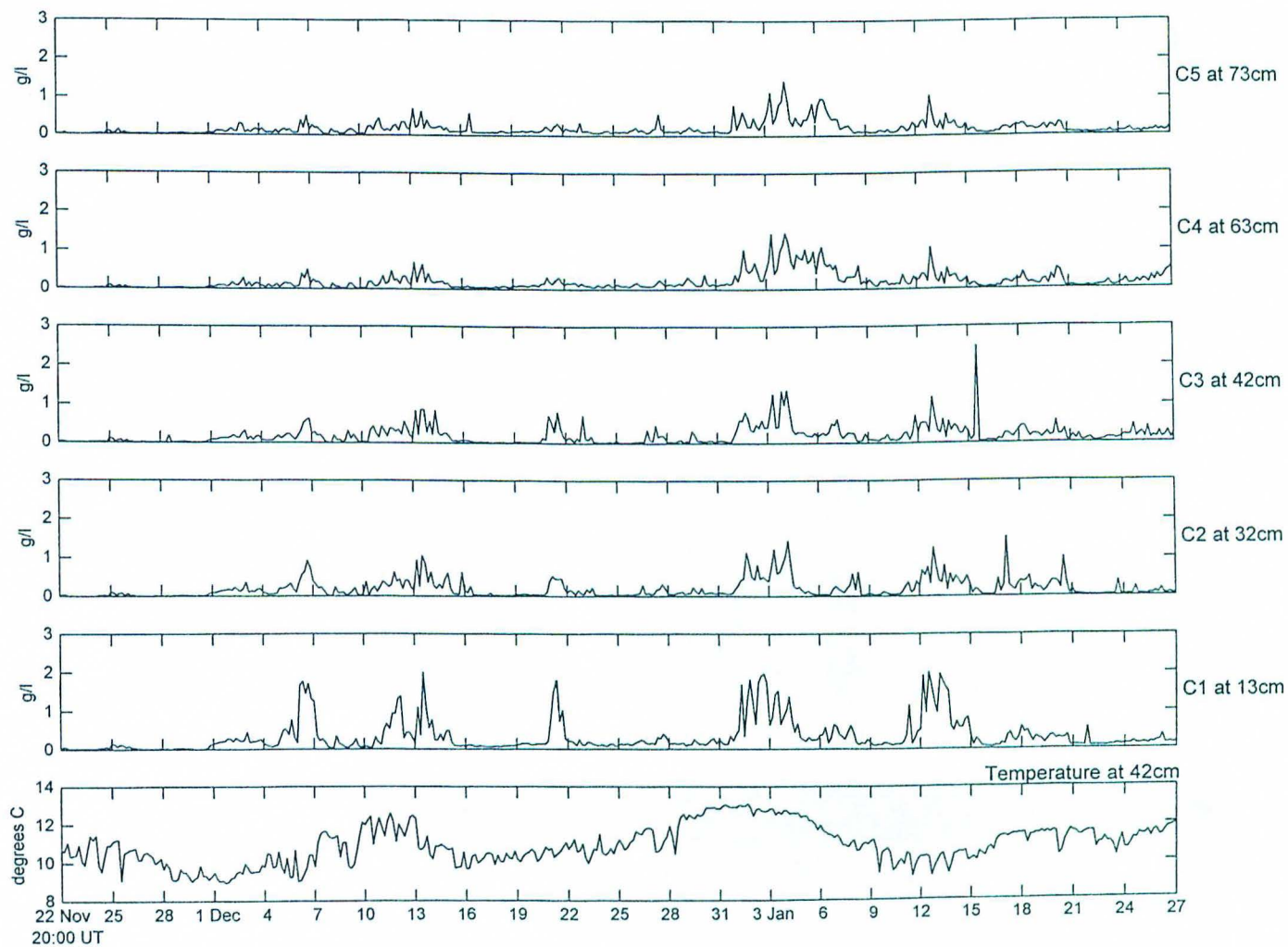


22 November 1996 - 27 January 1997

Velocity Vectors at Strataform G-60 Deep Pod Nov96/Jan97

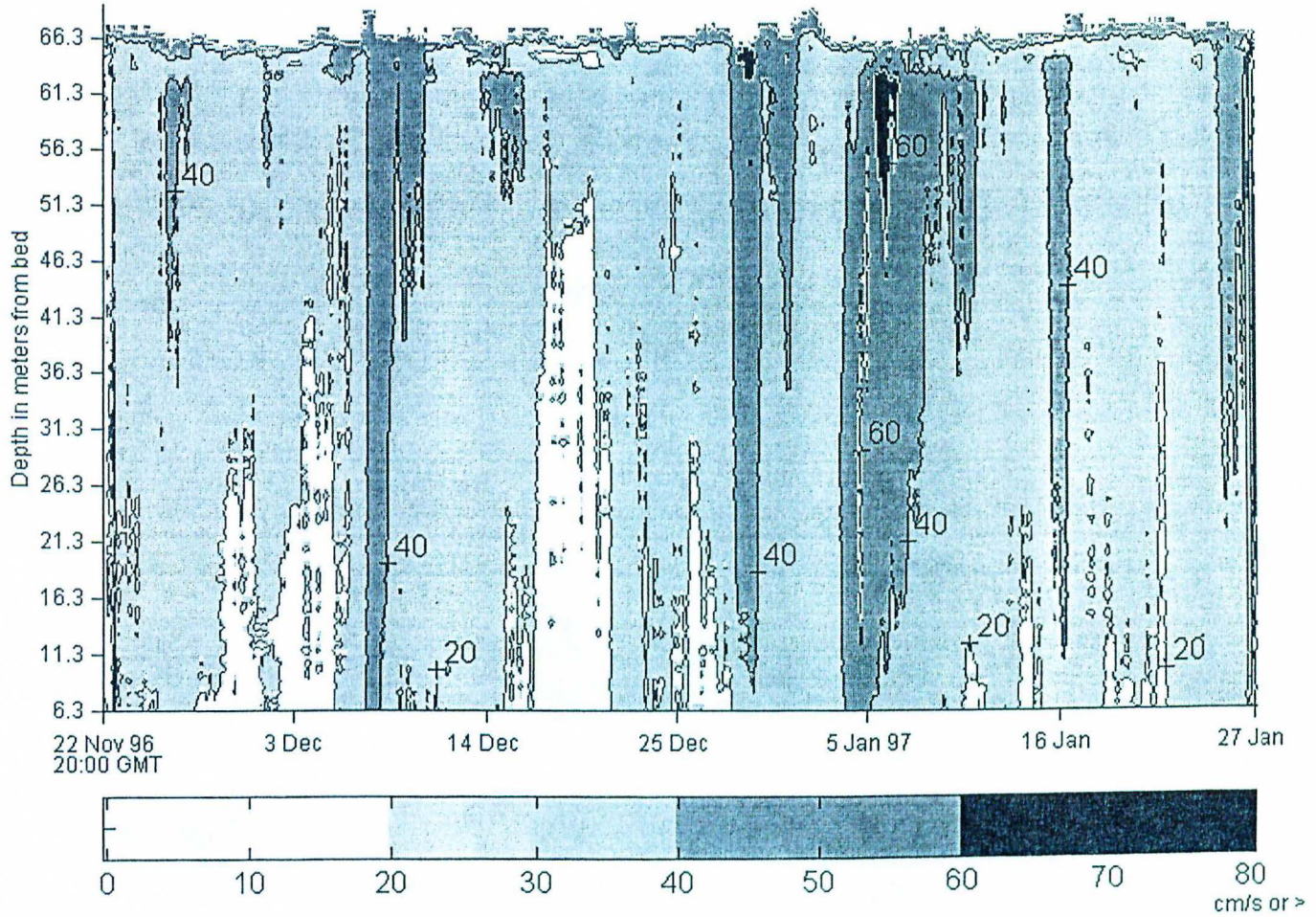


Suspended Sediment Data from Strataform G-60 Deep Pod

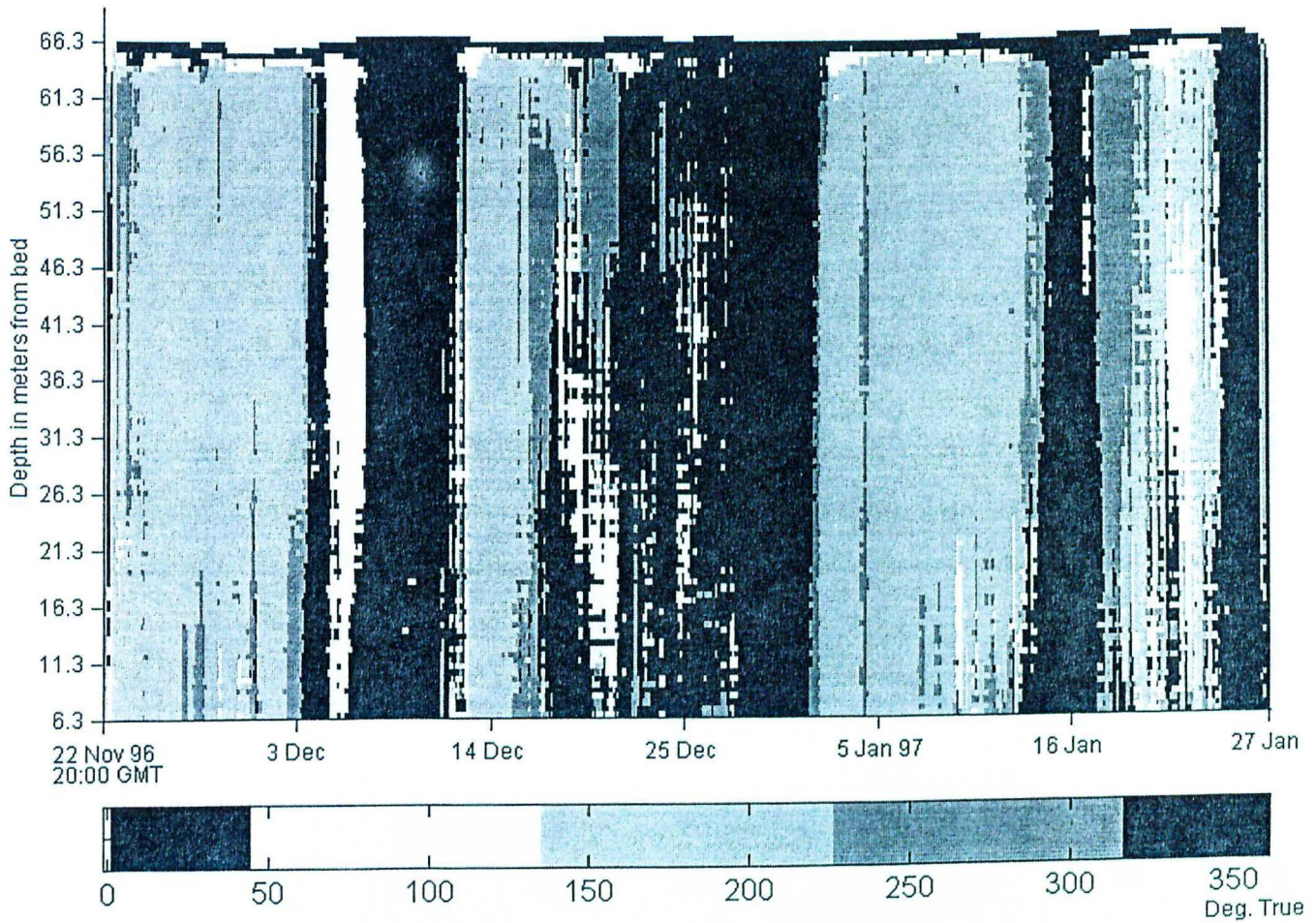


22 November 1996 - 27 January 1997

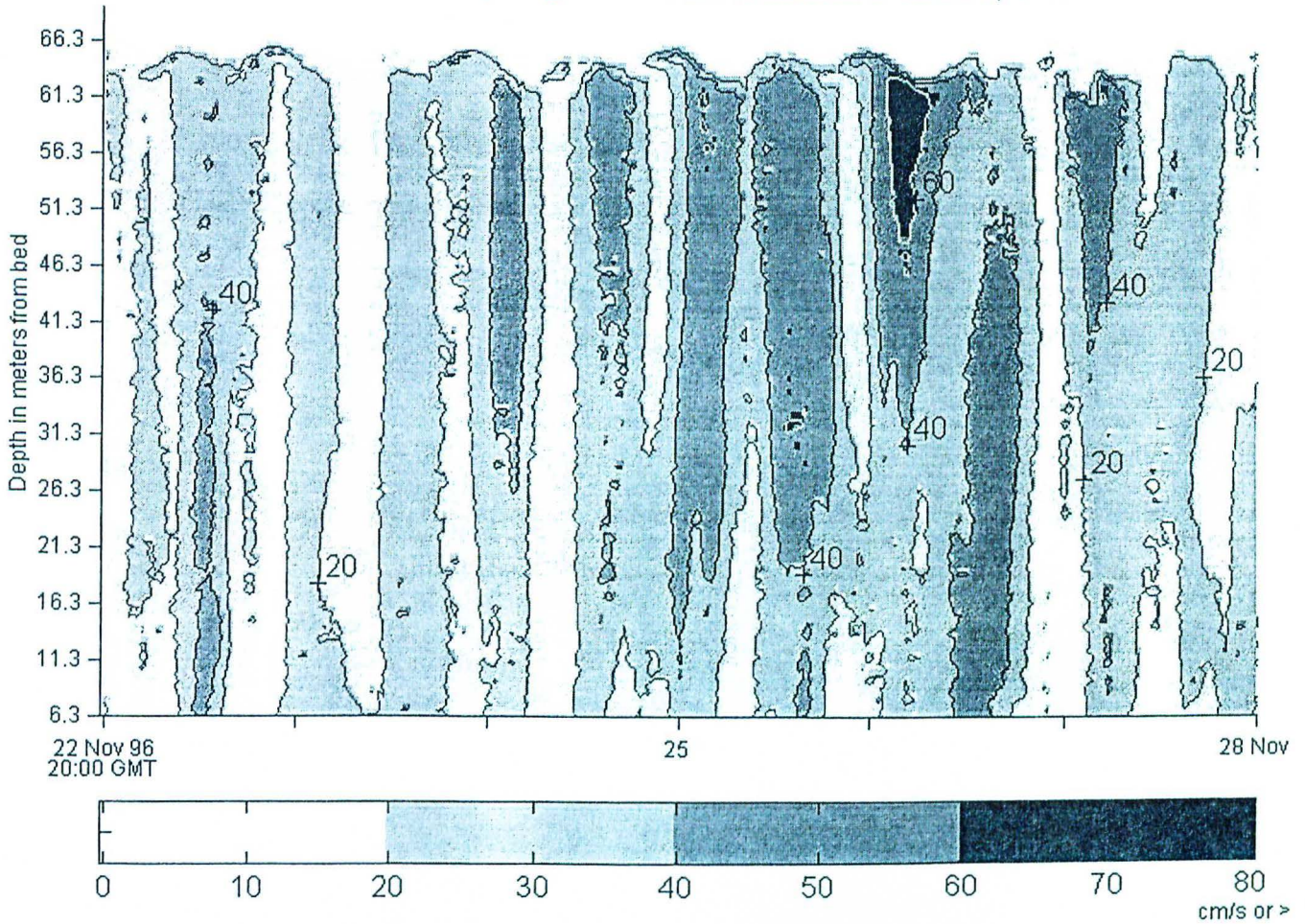
Low Pass (33 Hr) Water Column Magnitudes - Strataform G-60 Deep Pod



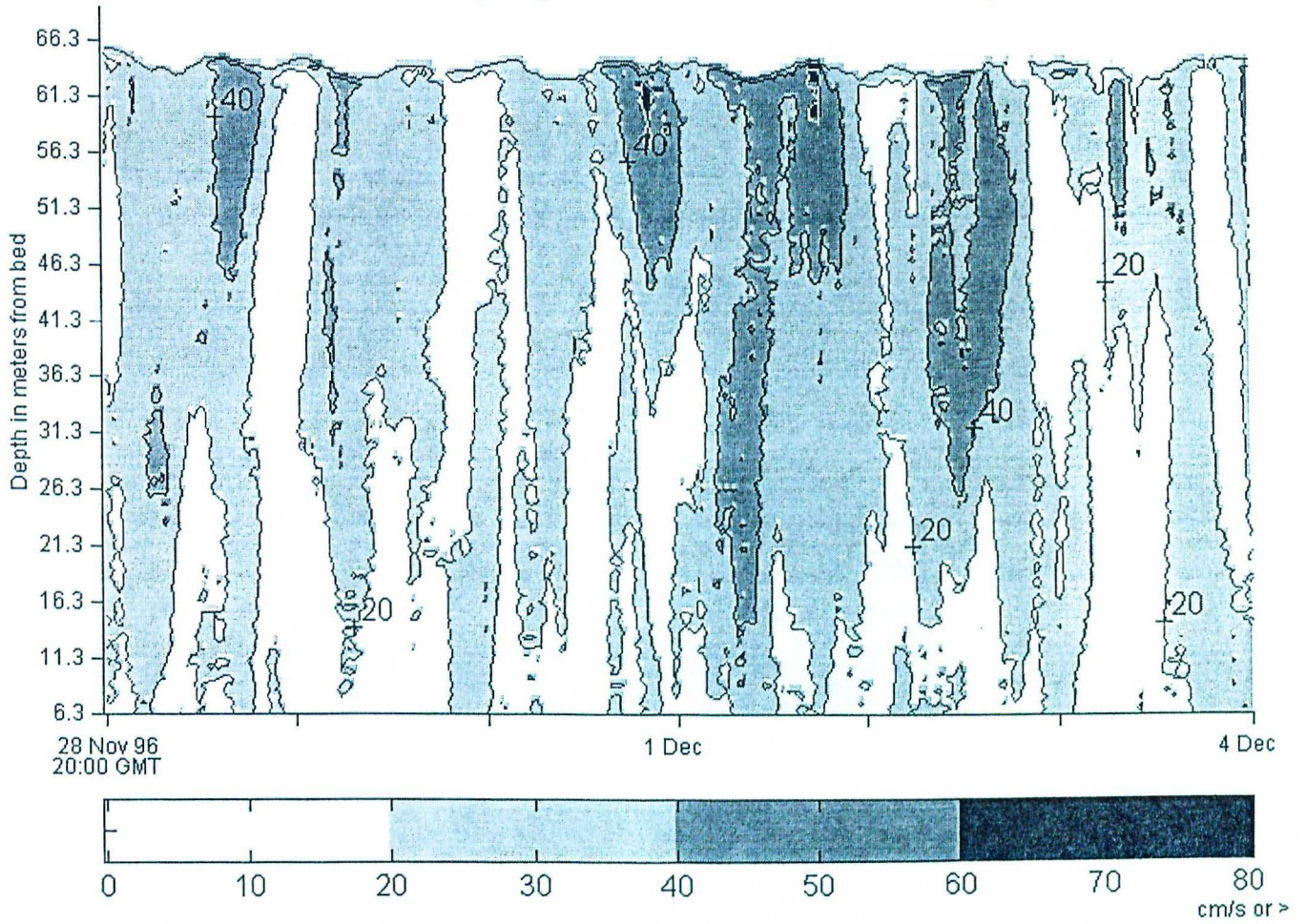
Low Pass (33 Hr) Water Column Current Headings - Strataform G-60 Deep Pod



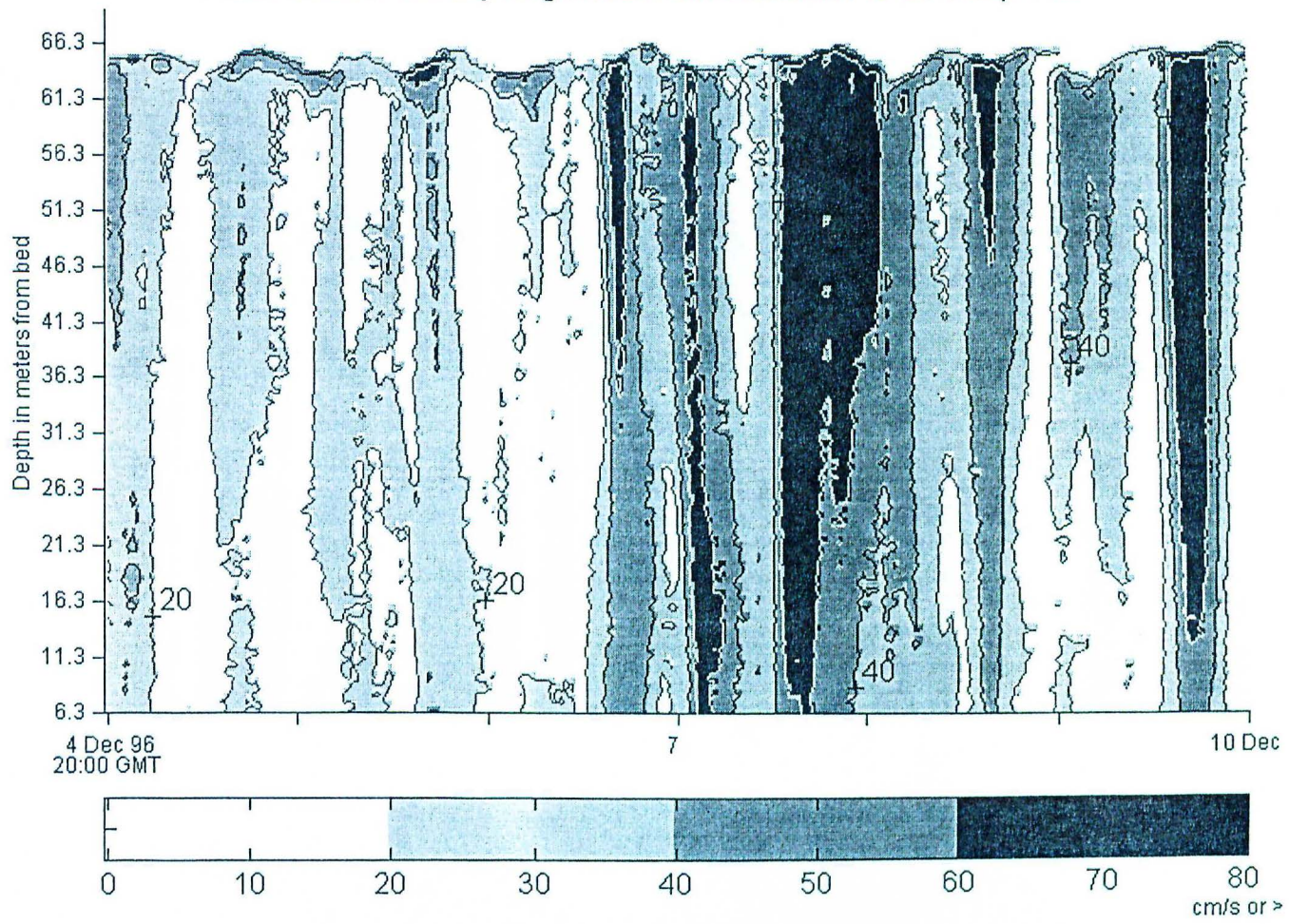
Water Column Velocity Magnitudes from Strataform G-60 Deep Pod



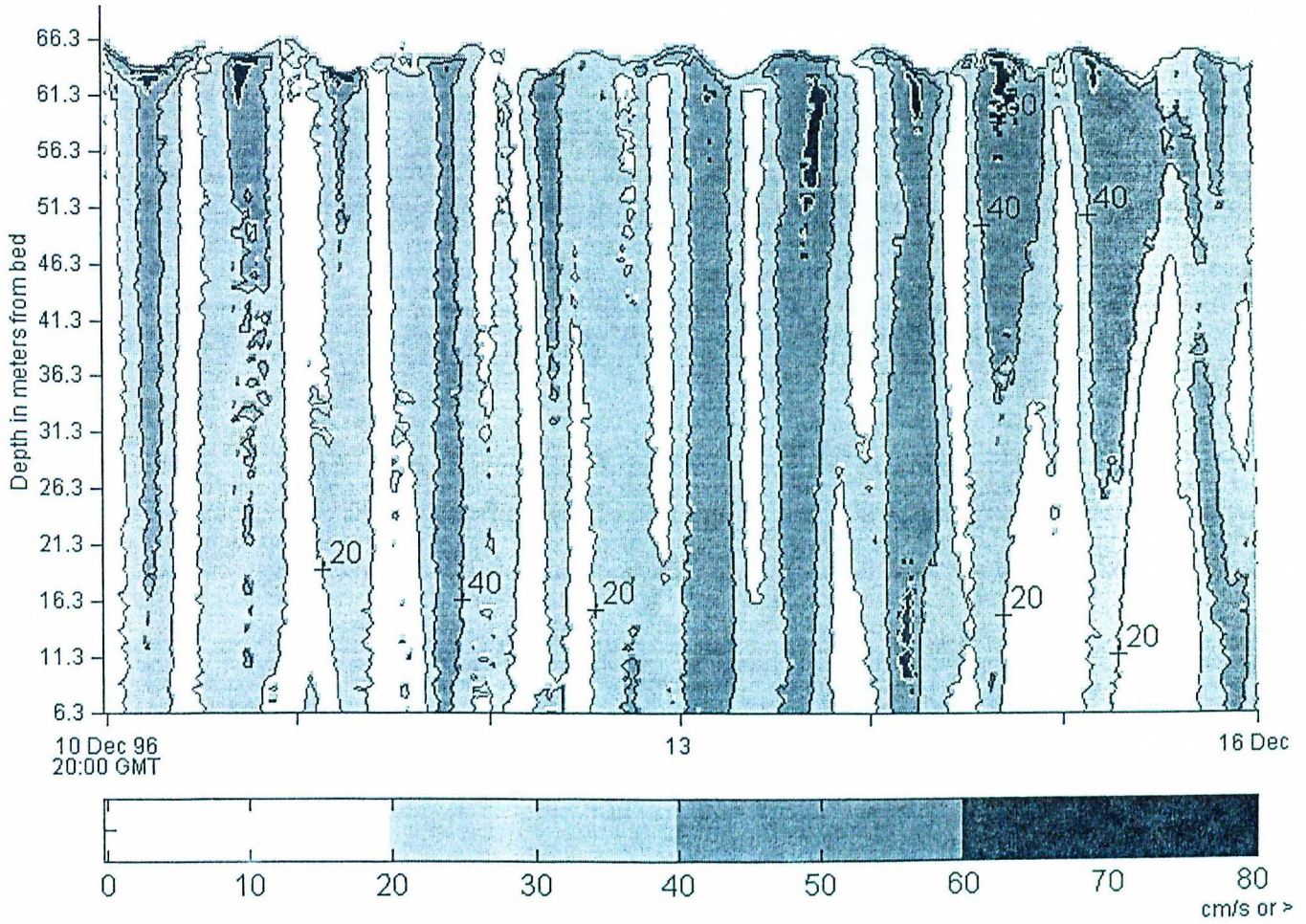
Water Column Velocity Magnitudes from Strataform G-60 Deep Pod



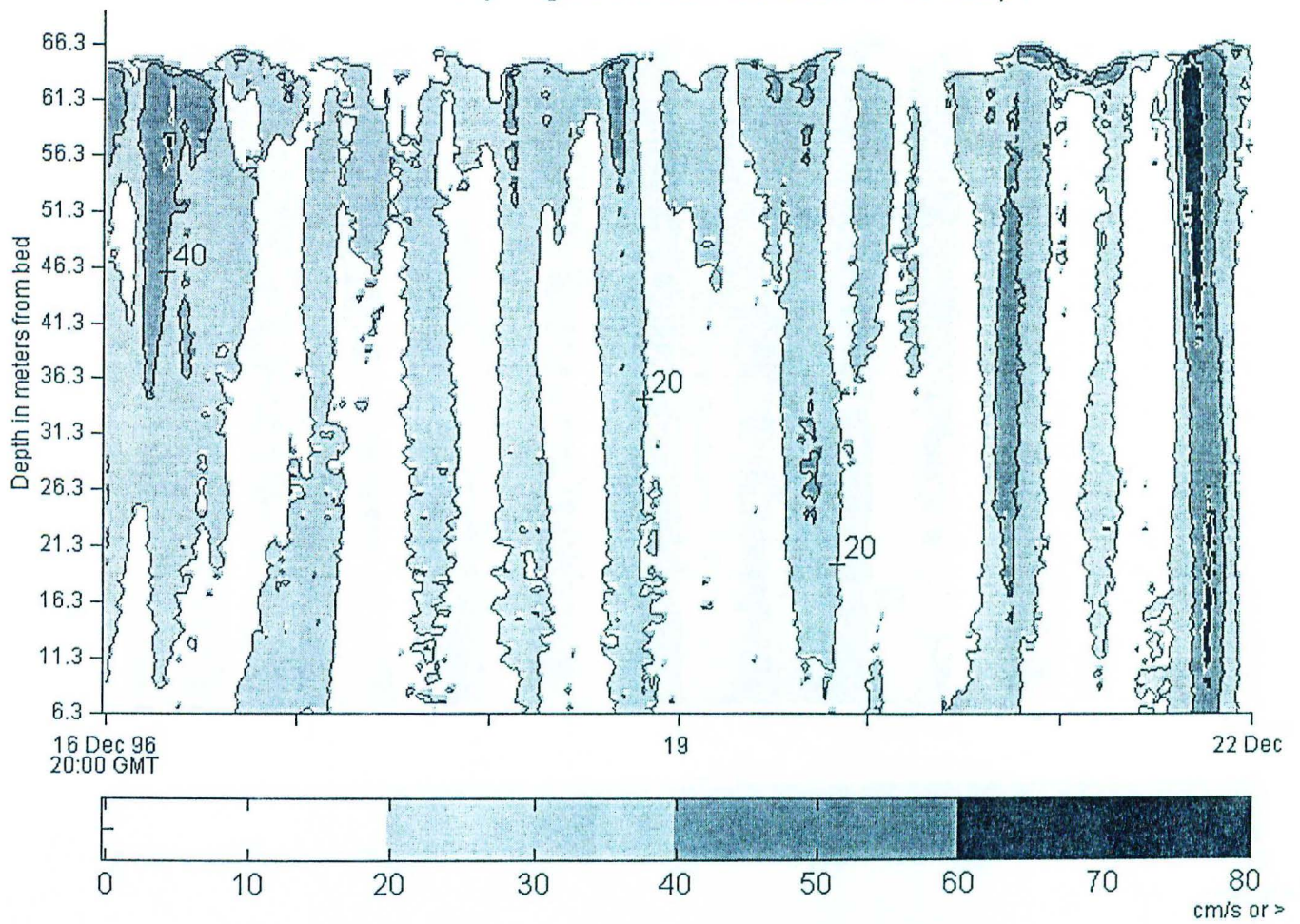
Water Column Velocity Magnitudes from Strataform G-60 Deep Pod



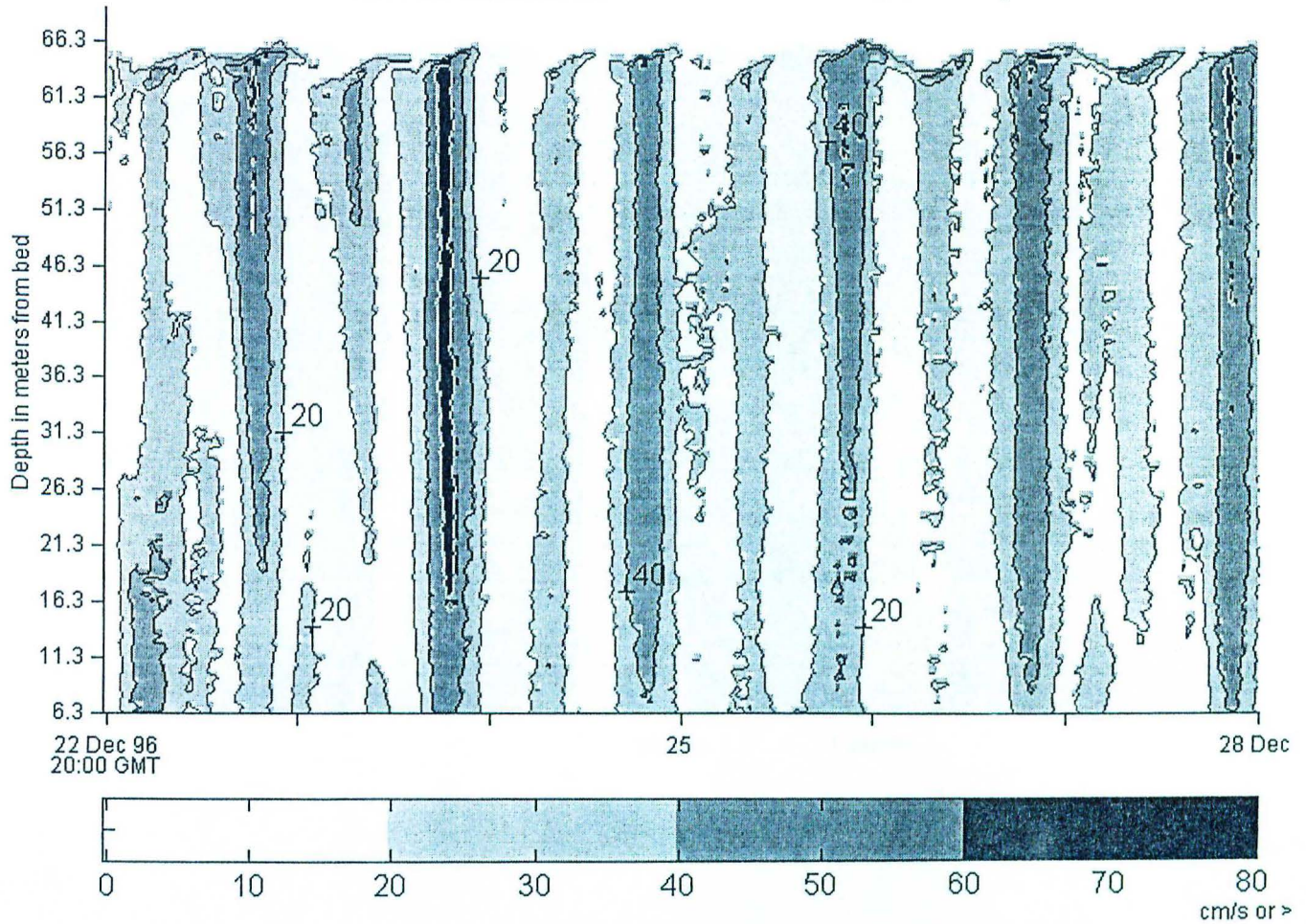
Water Column Velocity Magnitudes from Strataform G-60 Deep Pod



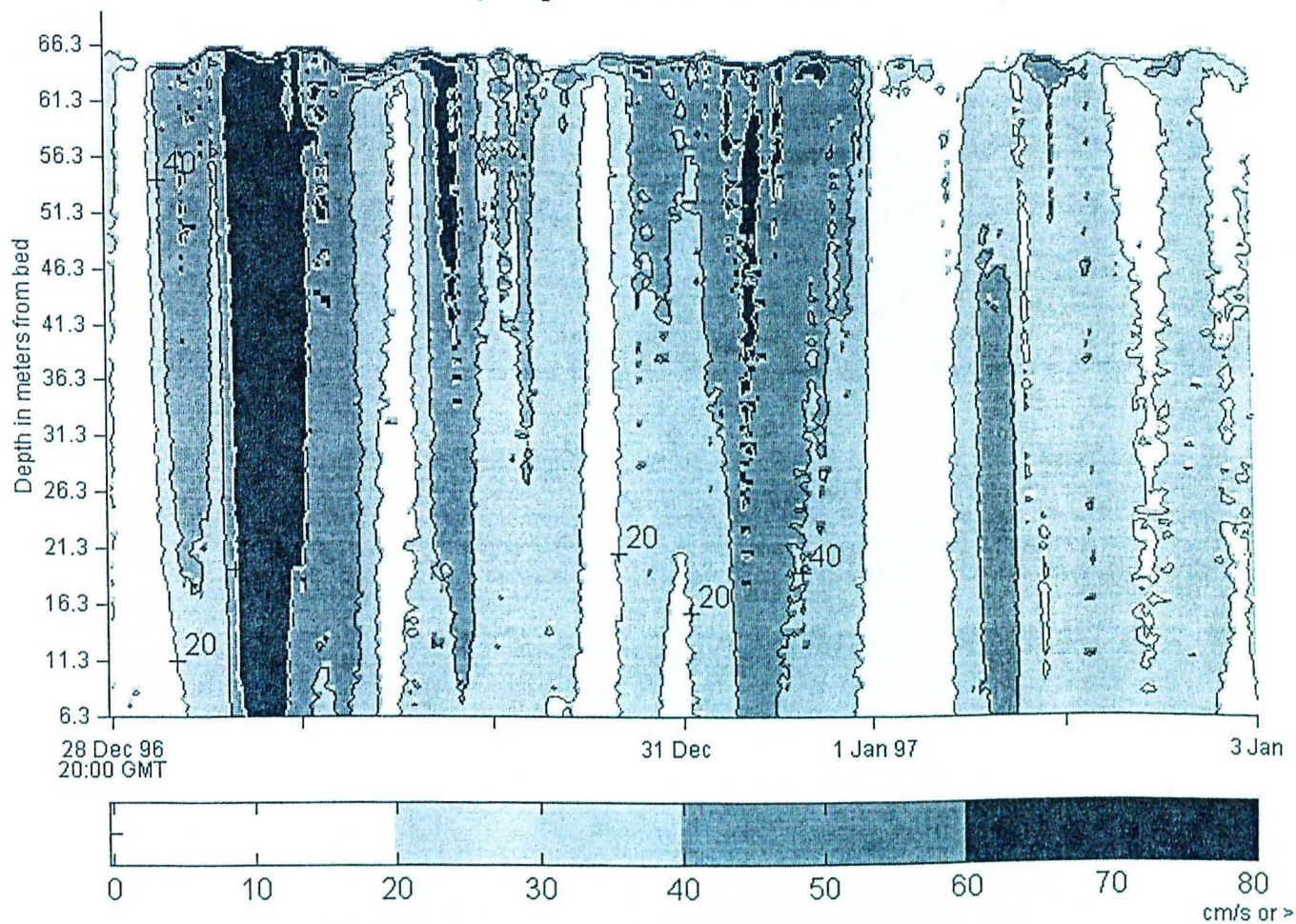
Water Column Velocity Magnitudes from Strataform G-60 Deep Pcd



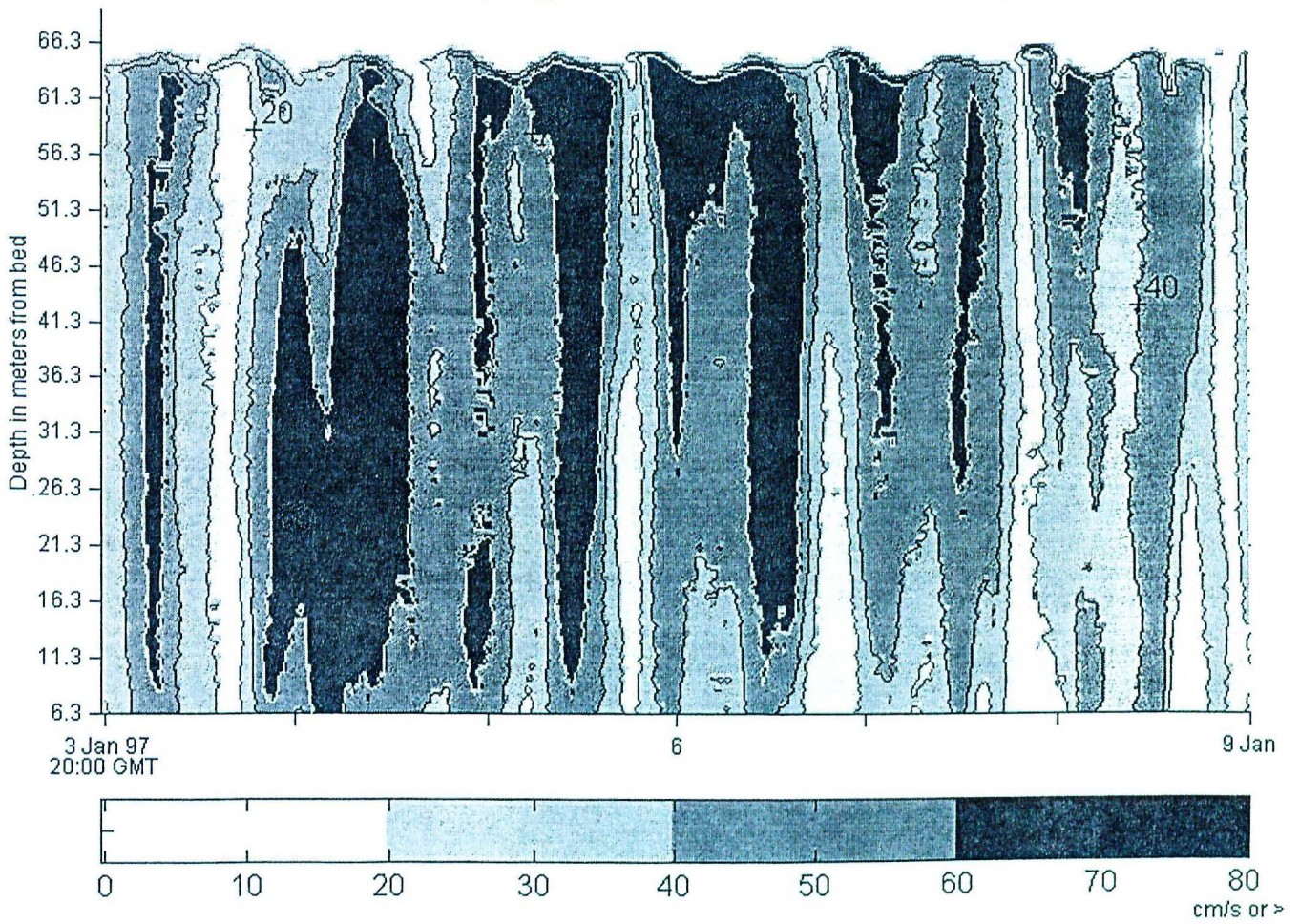
Water Column Velocity Magnitudes from Strataform G-60 Deep Pod



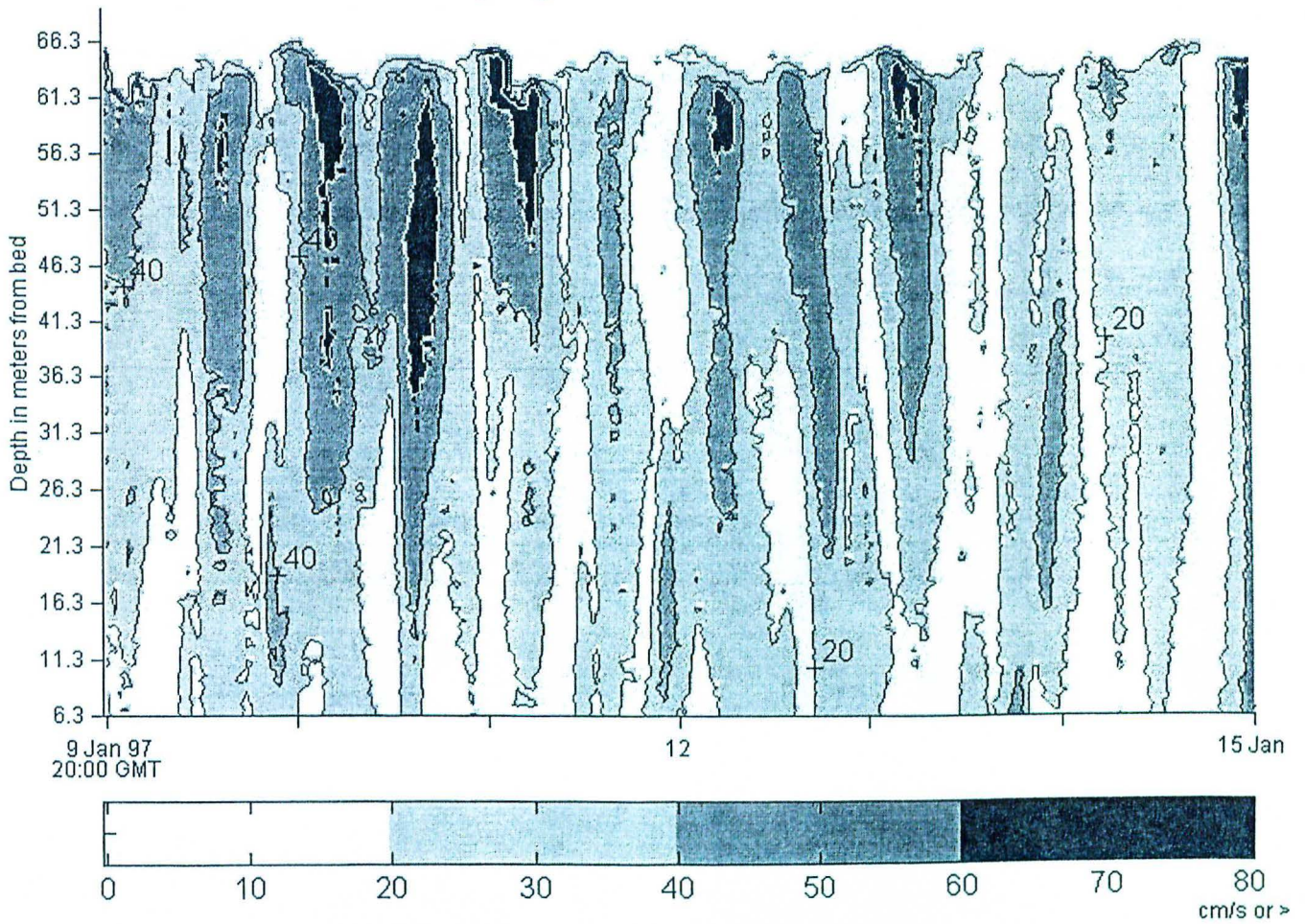
Water Column Velocity Magnitudes from Strataform G-60 Deep Pod



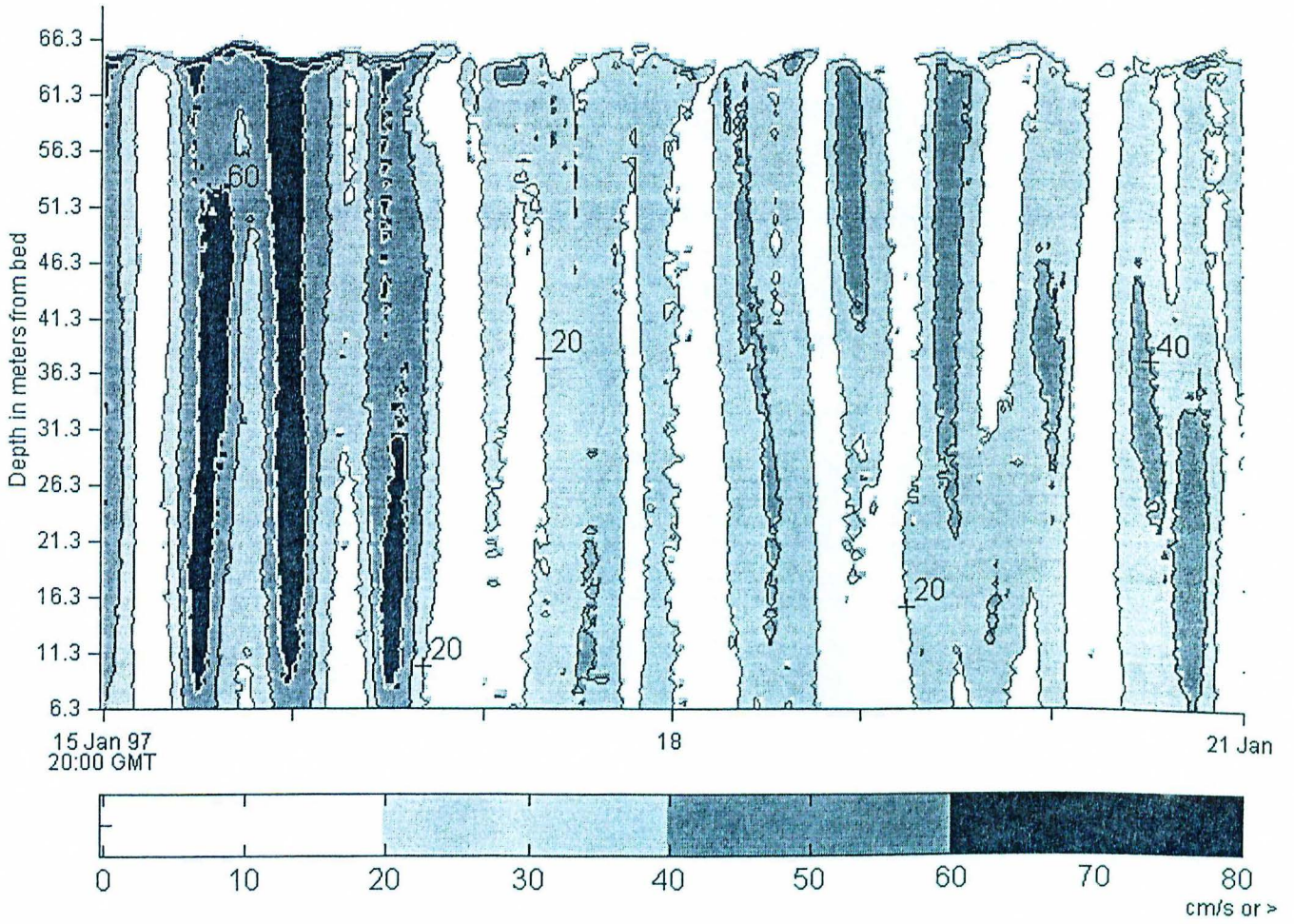
Water Column Velocity Magnitudes from Strataform G-60 Deep Pod



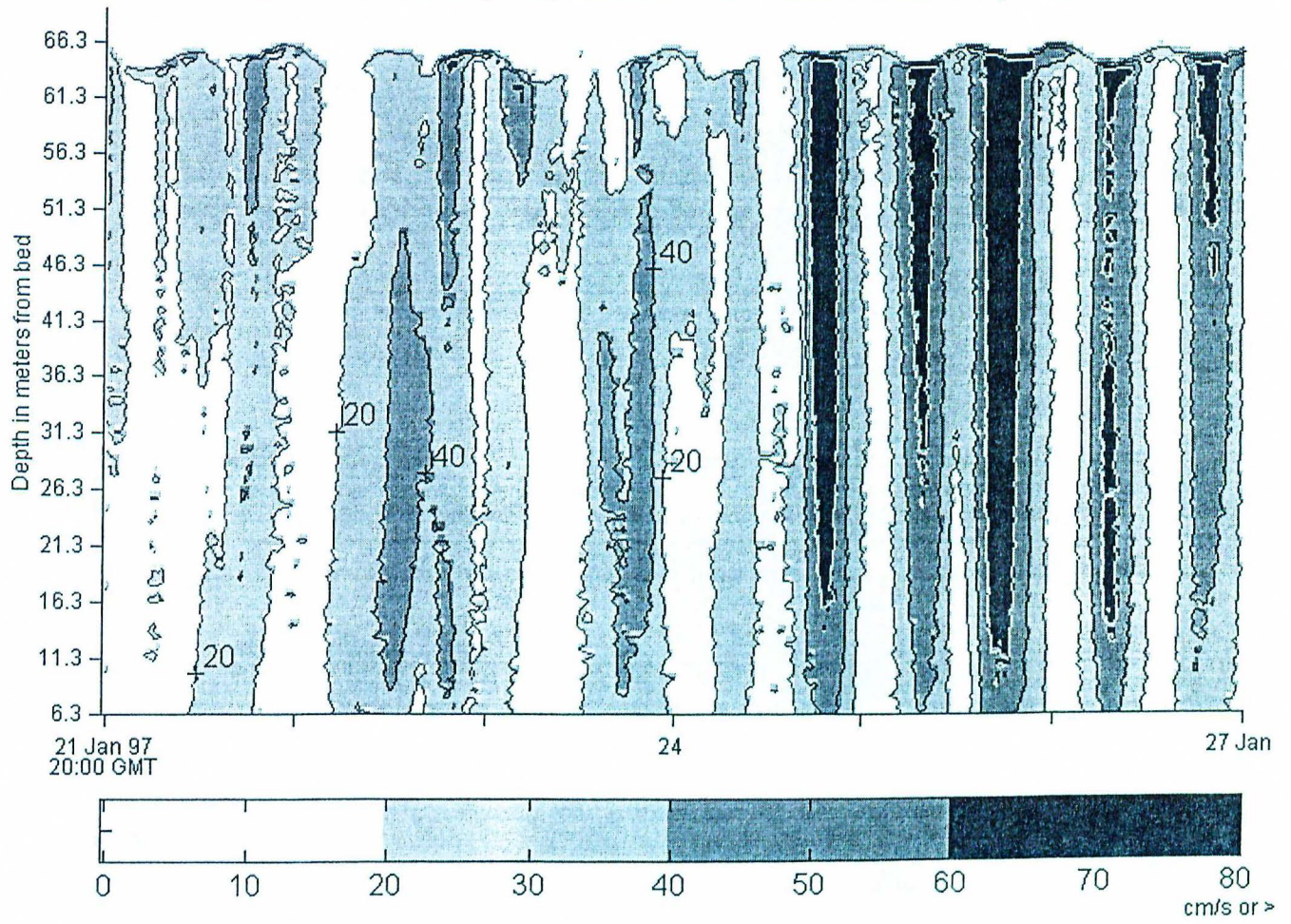
Water Column Velocity Magnitudes from Strataform G-60 Deep Pod



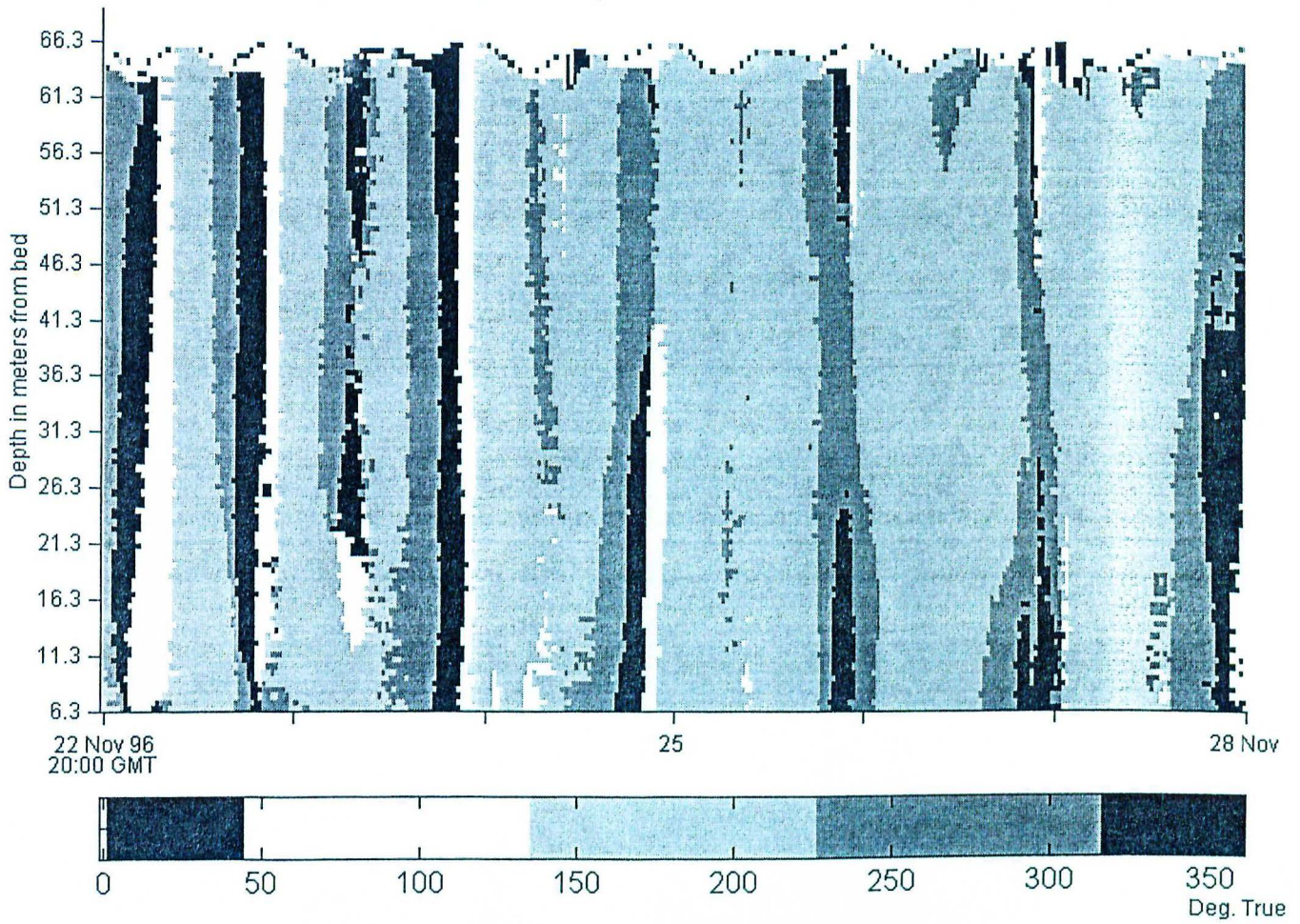
Water Column Velocity Magnitudes from Strataform G-60 Deep Pod



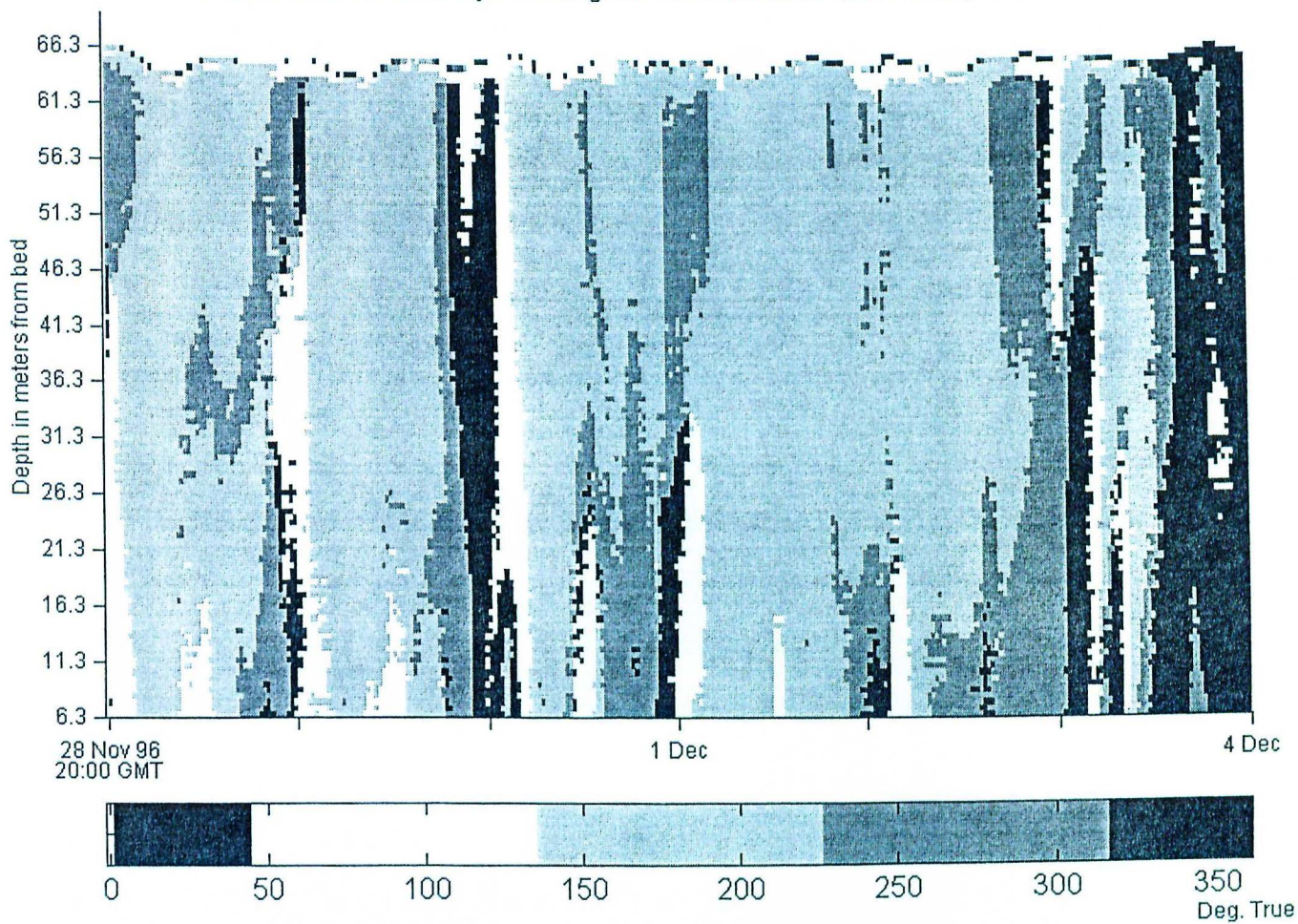
Water Column Velocity Magnitudes from Strataform G-60 Deep Pod



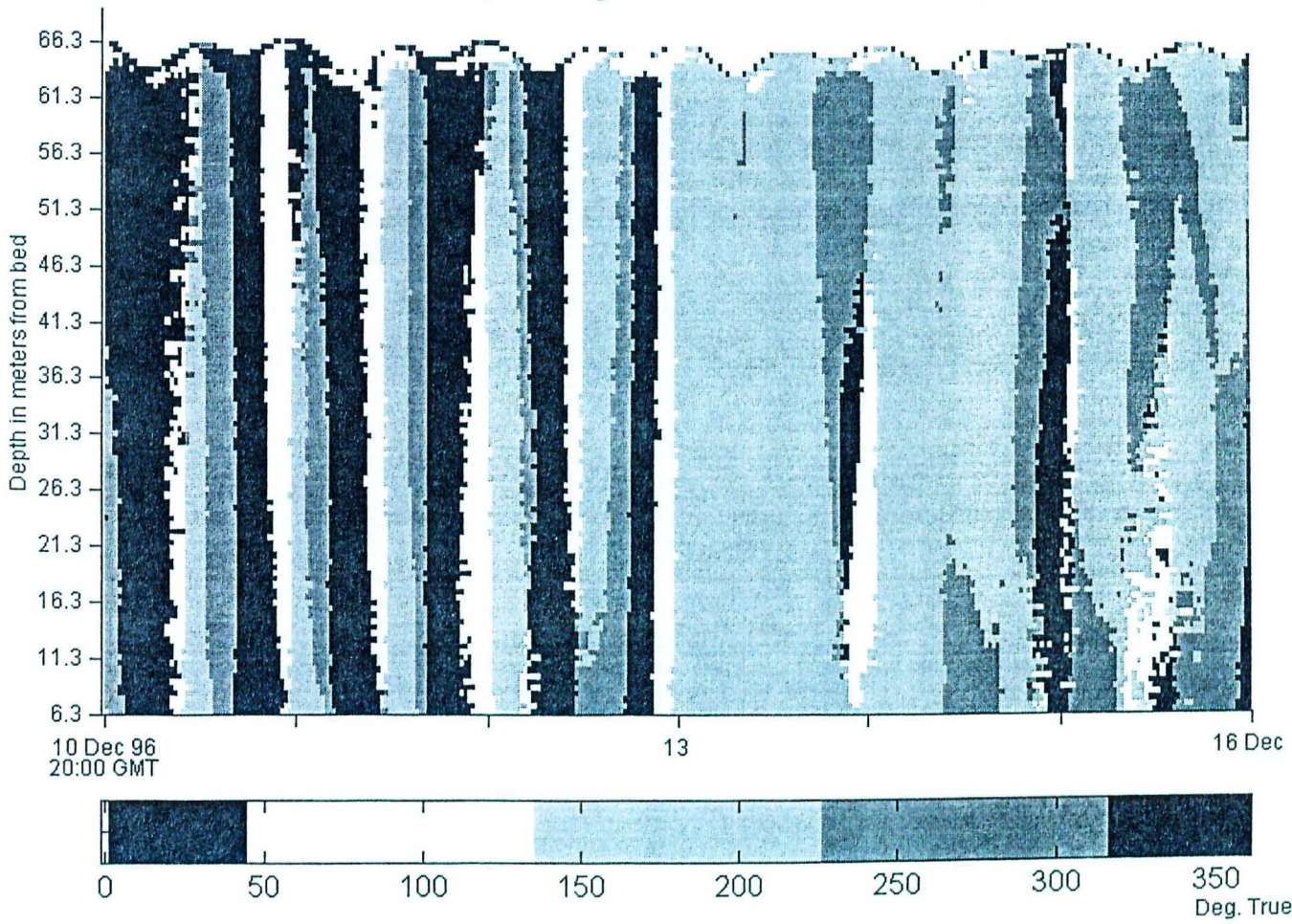
Water Column Velocity Headings from Strataform G-60 Deep Pod



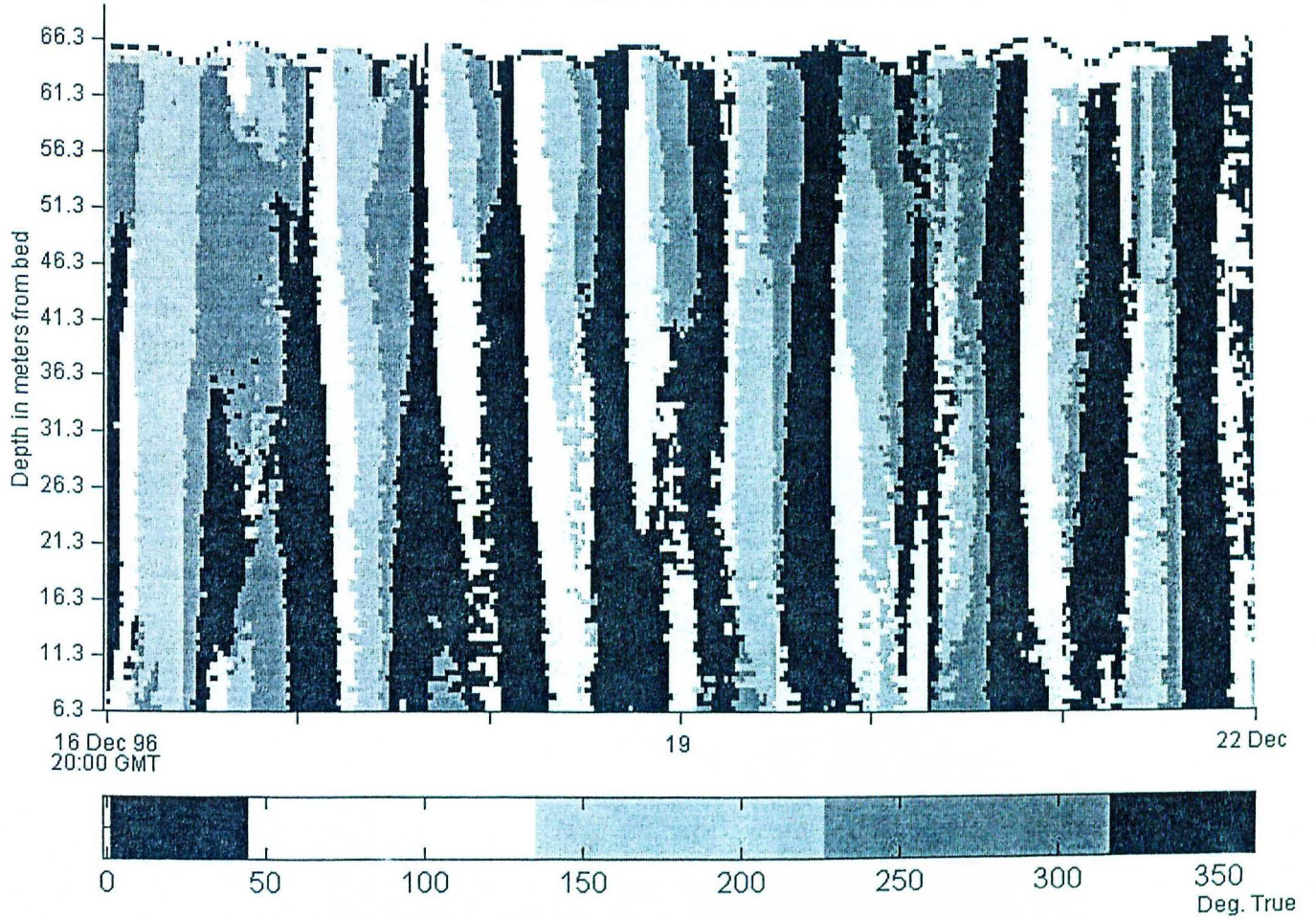
Water Column Velocity Headings from Strataform G-60 Deep Pod



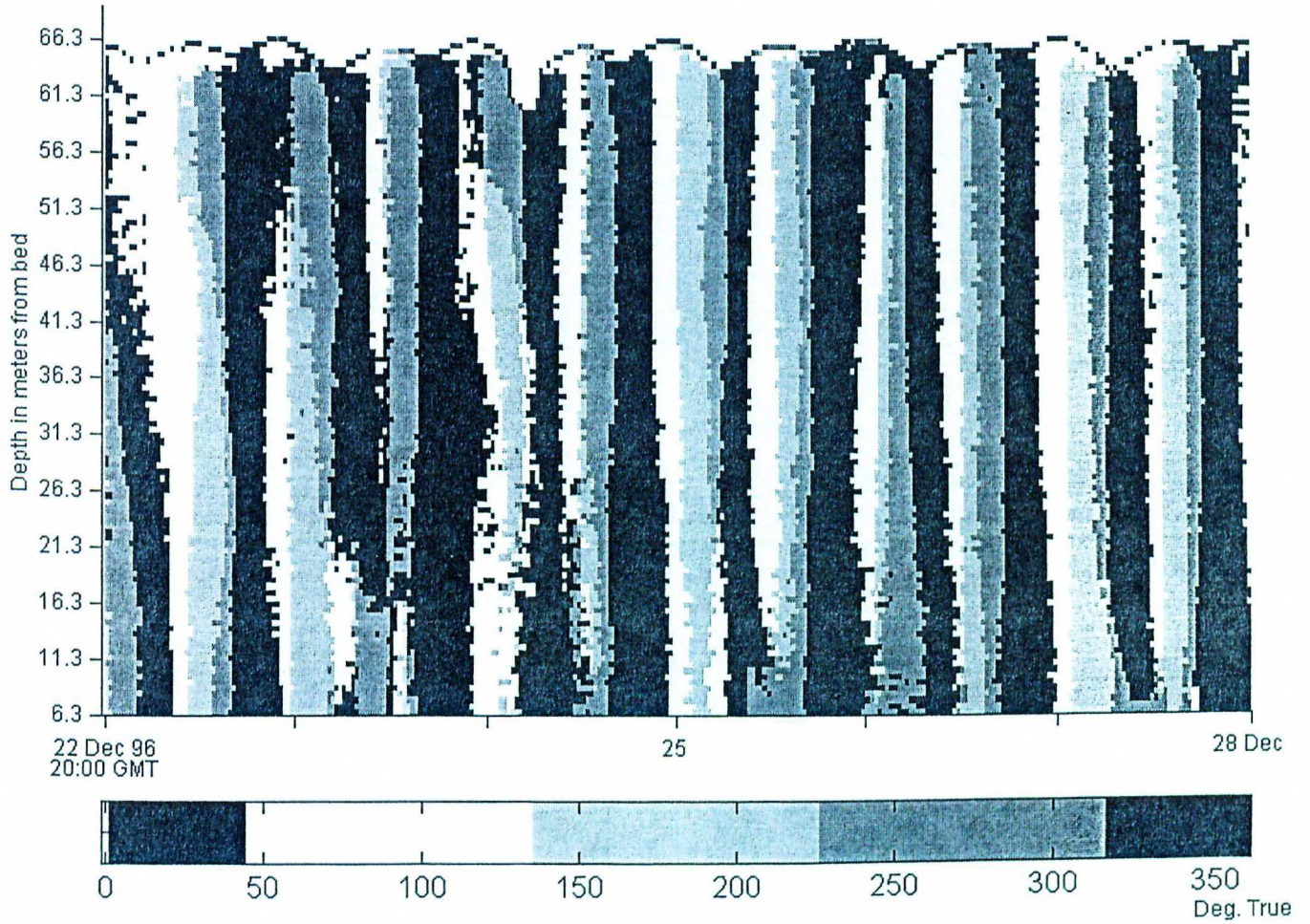
Water Column Velocity Headings from Strataform G-60 Deep Pod



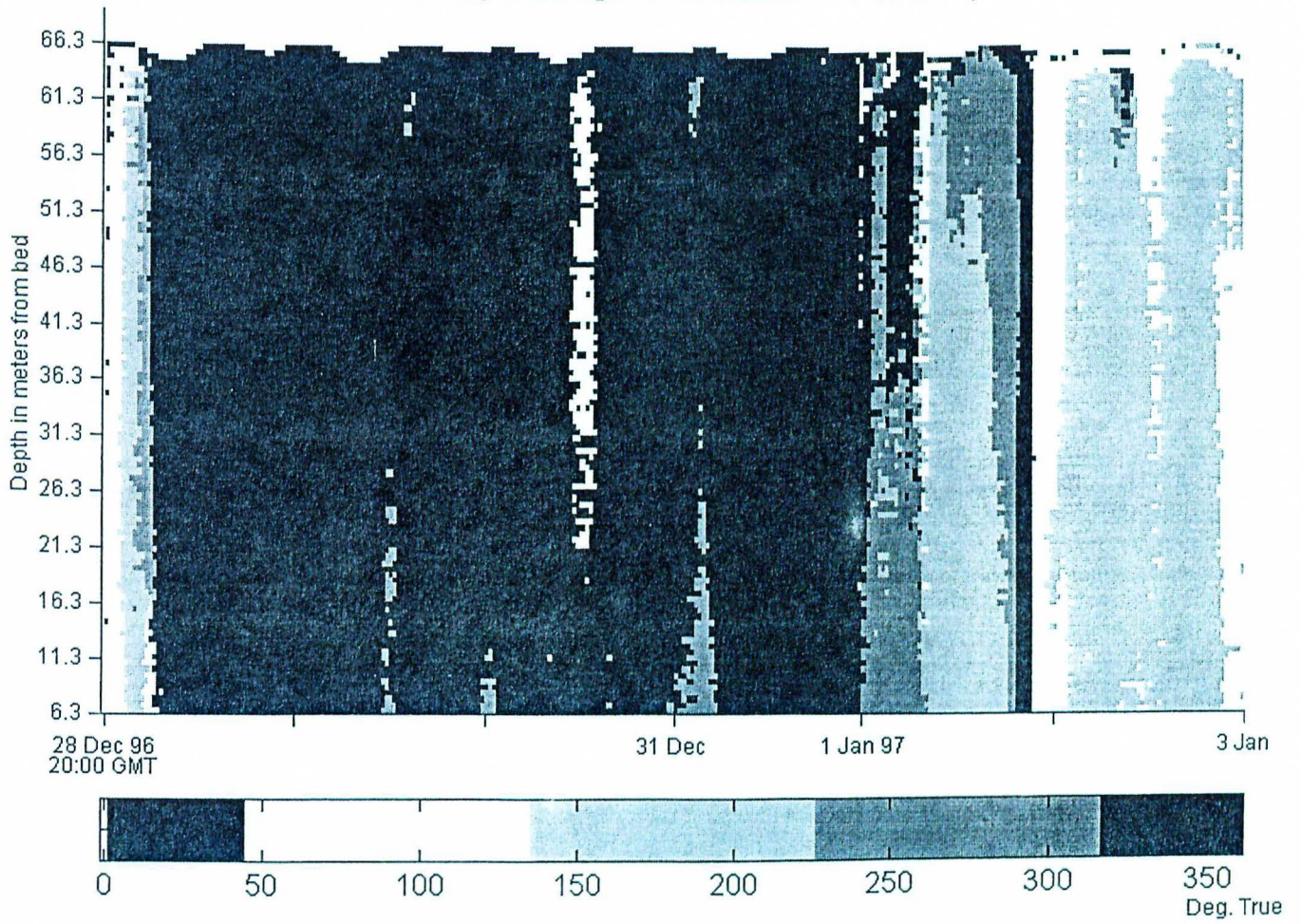
Water Column Velocity Headings from Strataform G-60 Deep Pod



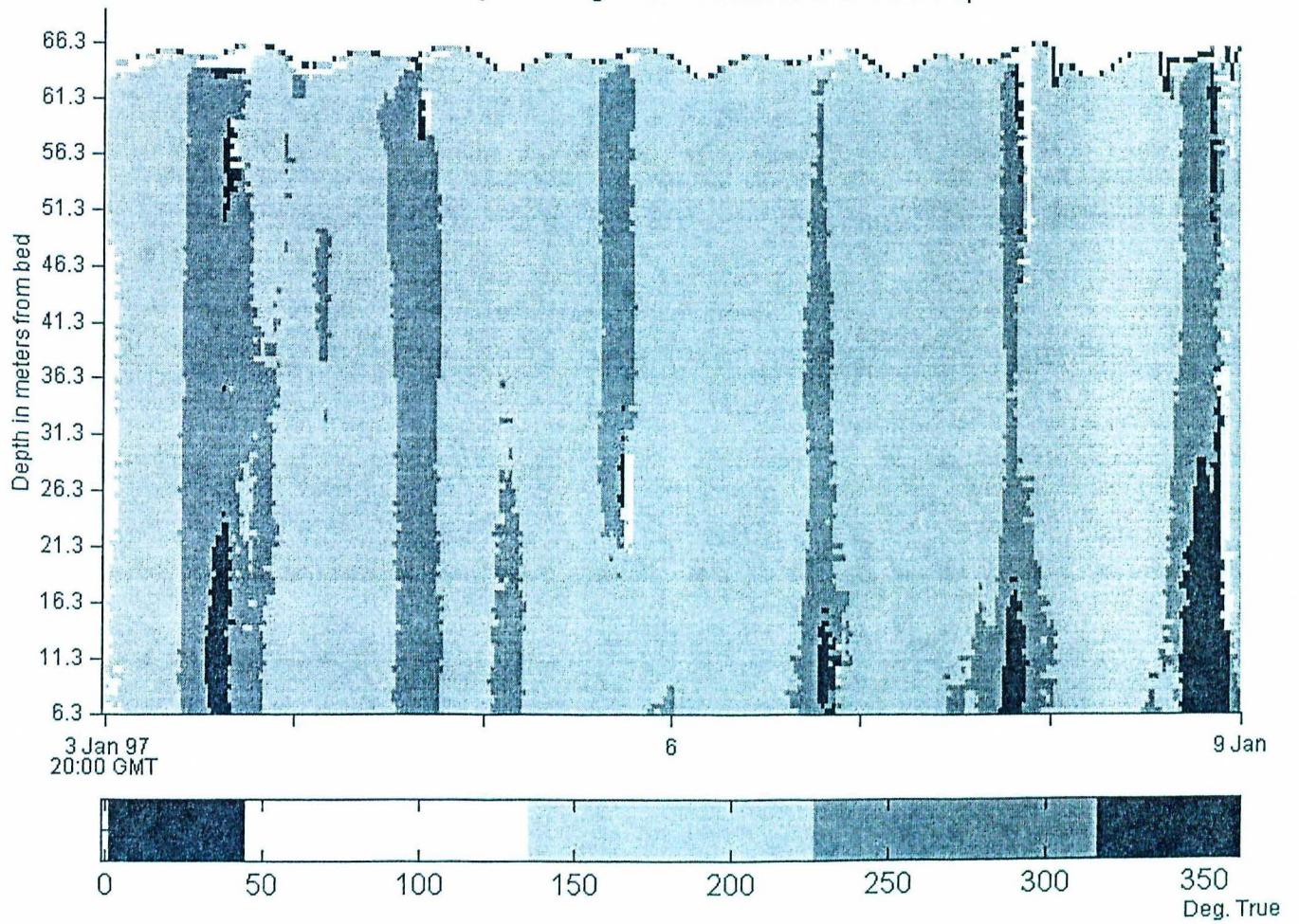
Water Column Velocity Headings from Strataform G-60 Deep Pod



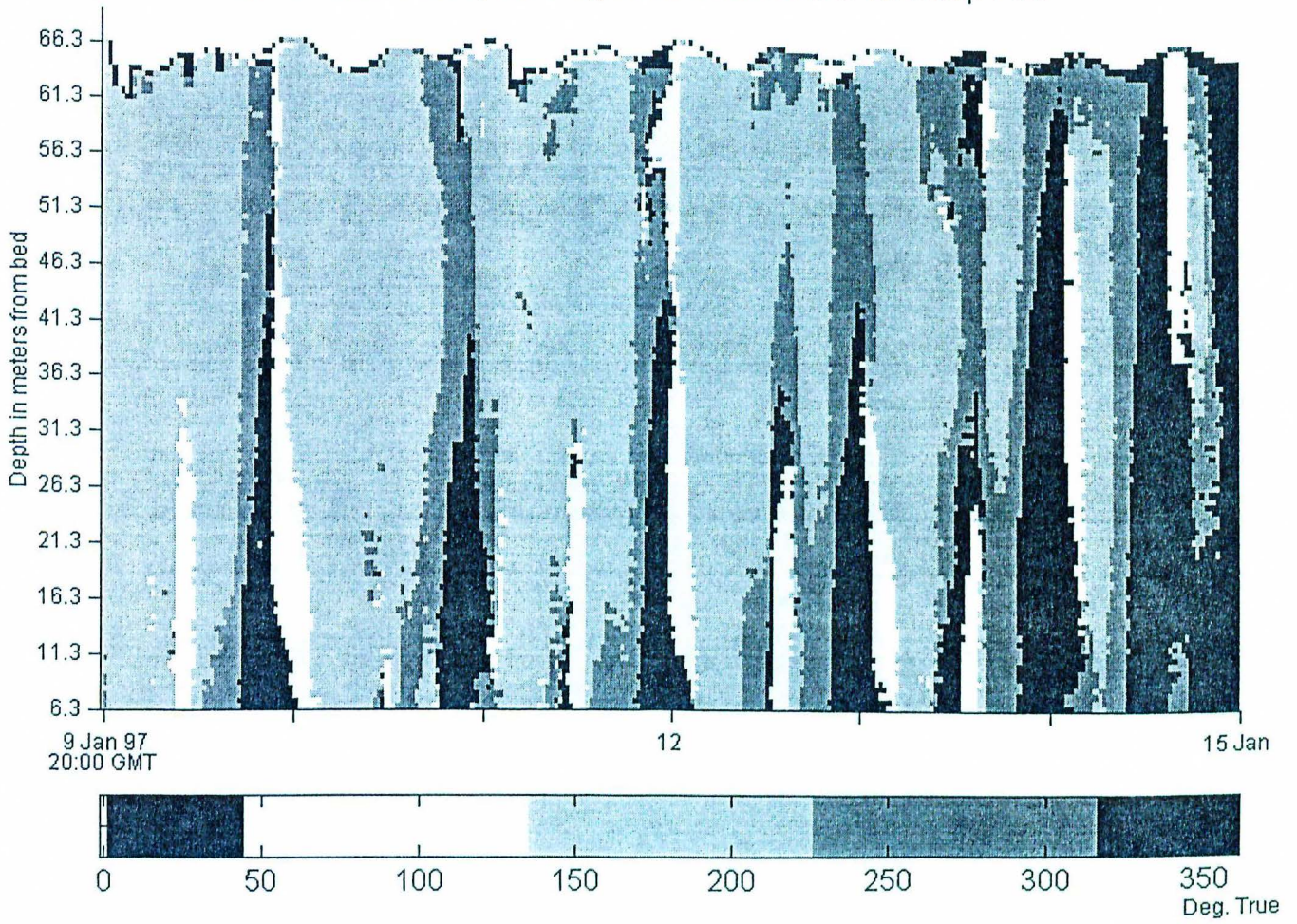
Water Column Velocity Headings from Strataform G-60 Deep Pod



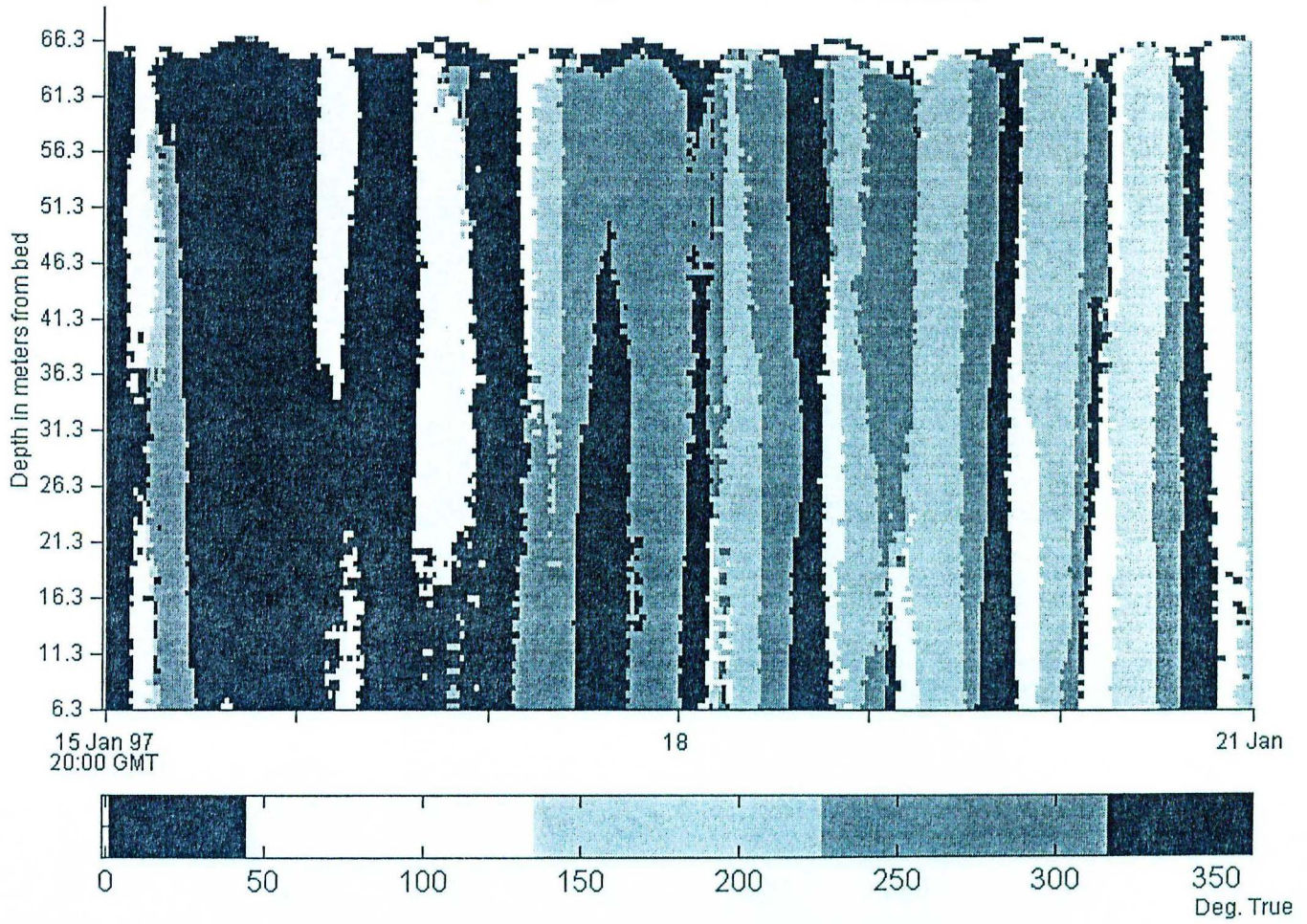
Water Column Velocity Headings from Strataform G-60 Deep Pod



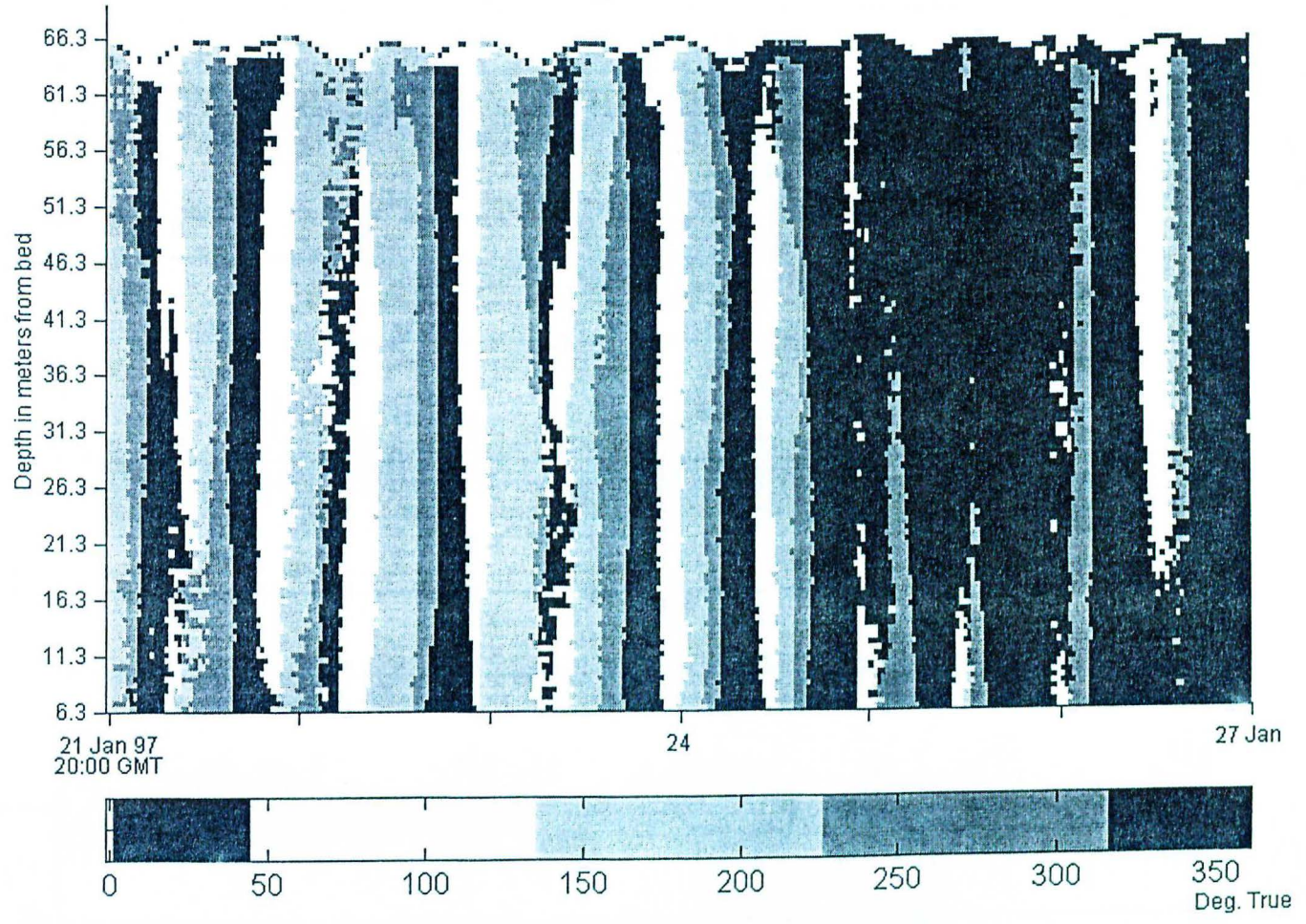
Water Column Velocity Headings from Strataform G-60 Deep Pod



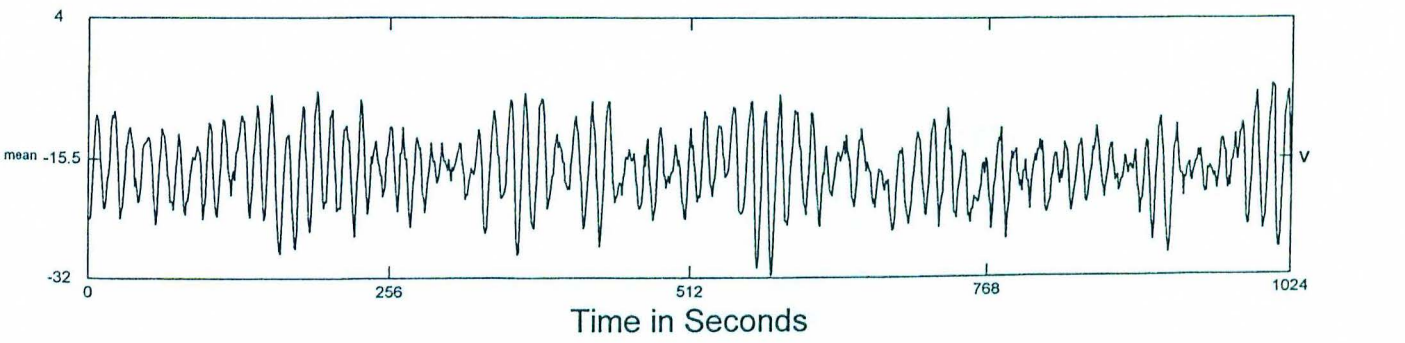
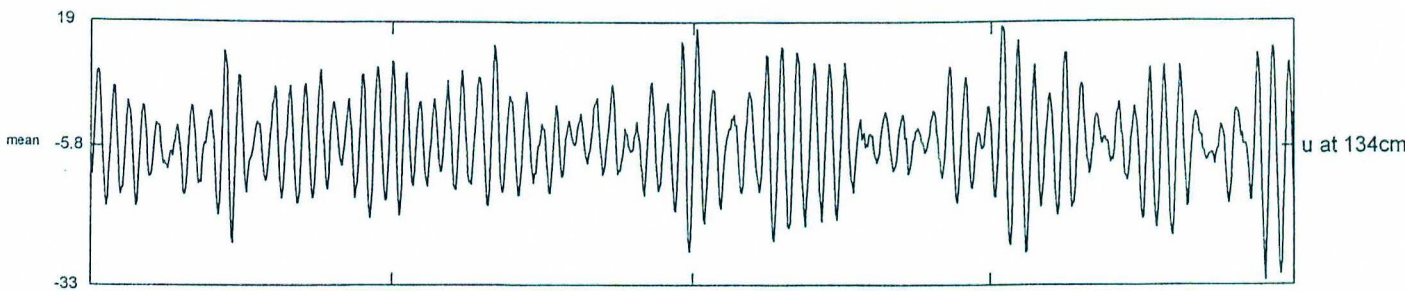
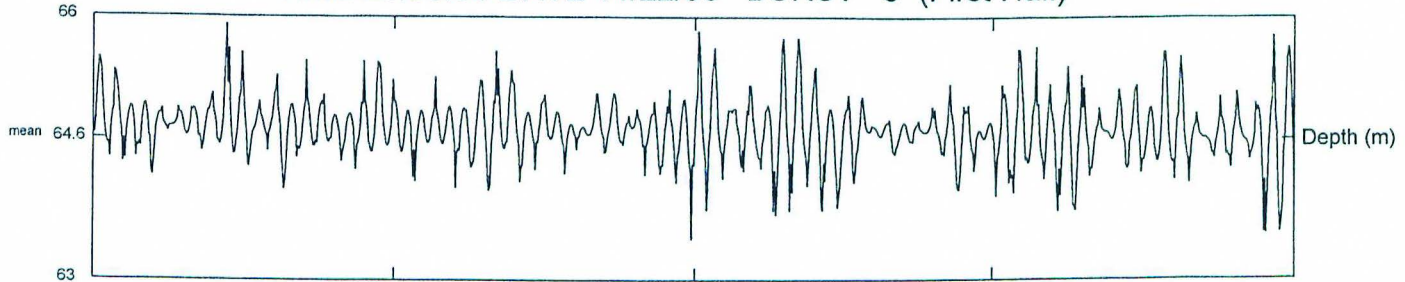
Water Column Velocity Headings from Strataform G-60 Deep Pod



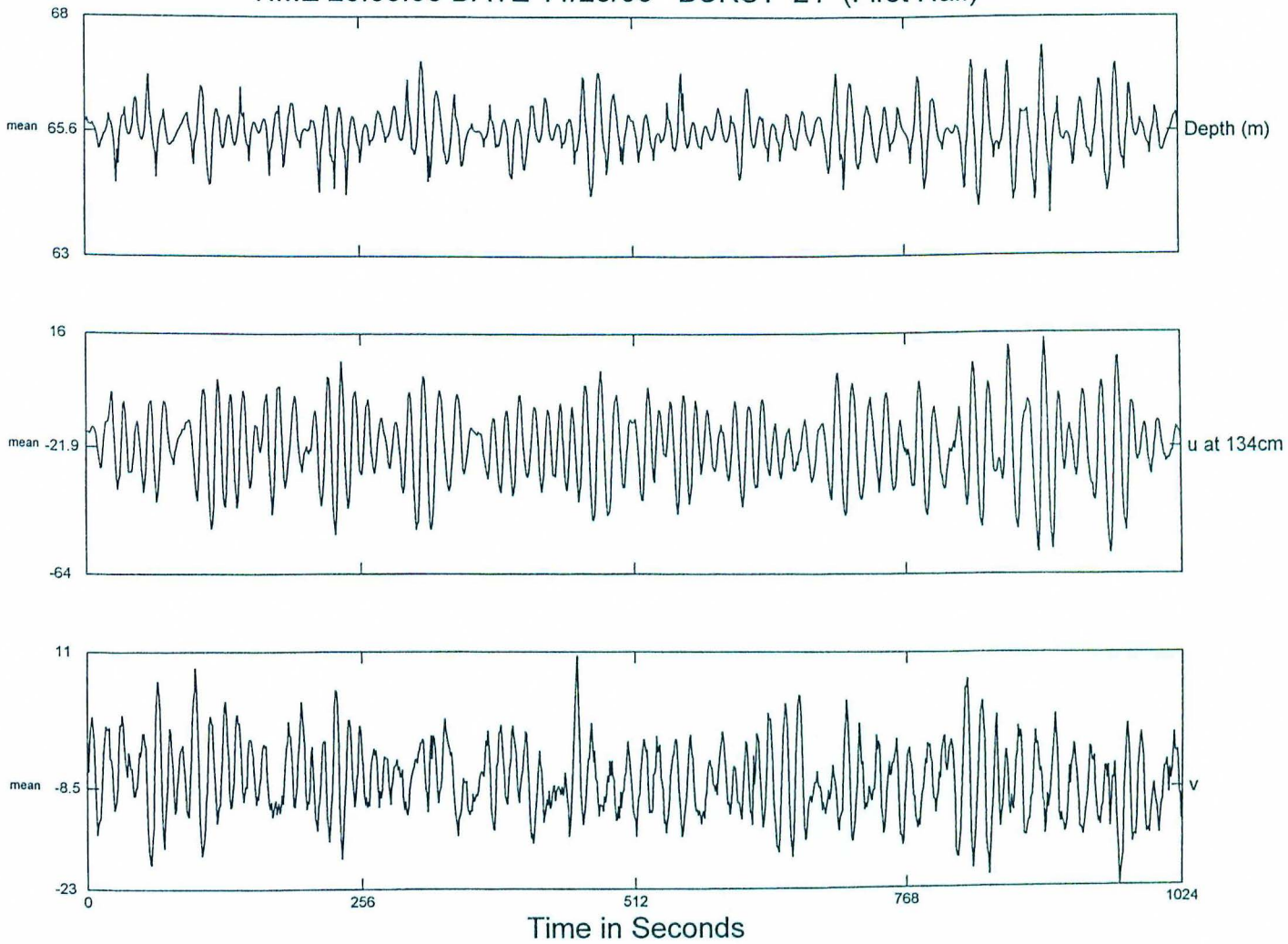
Water Column Velocity Headings from Strataform G-60 Deep Pod



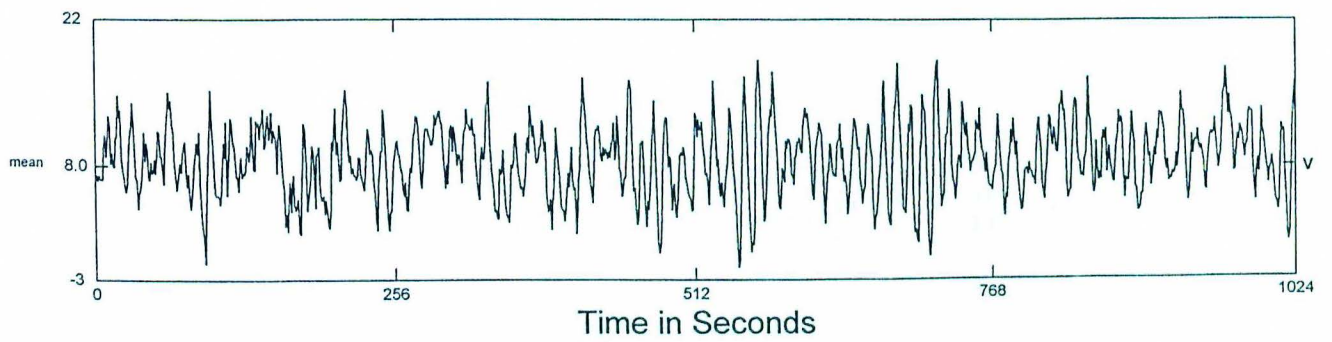
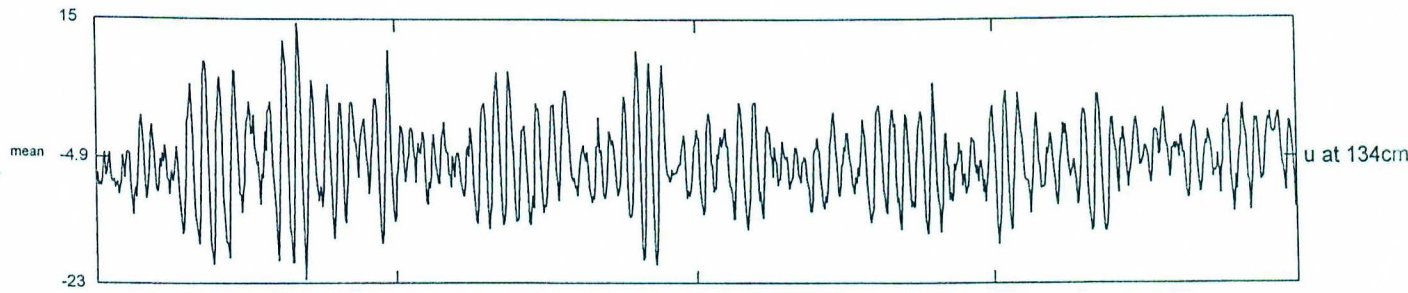
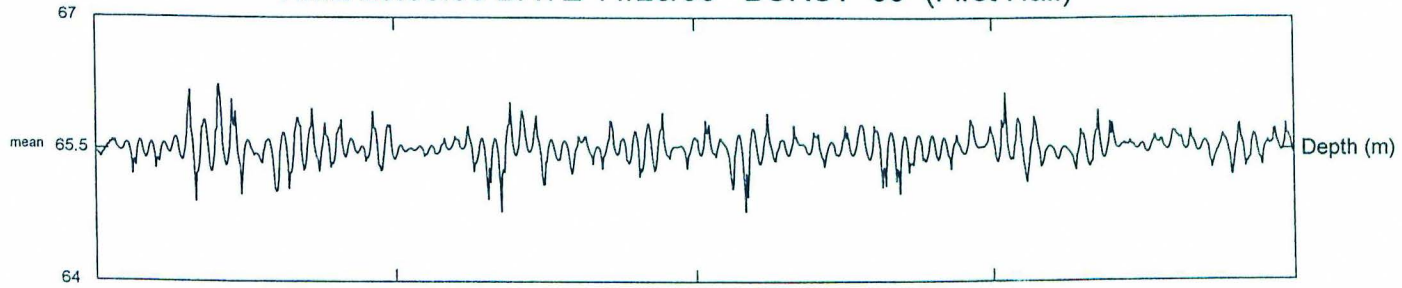
635 Burst Data from Strataform G-60 Deep Pod (u +East v +North in cm/s)
TIME 20:00:00 DATE 11/22/96 BURST 3 (First Half)



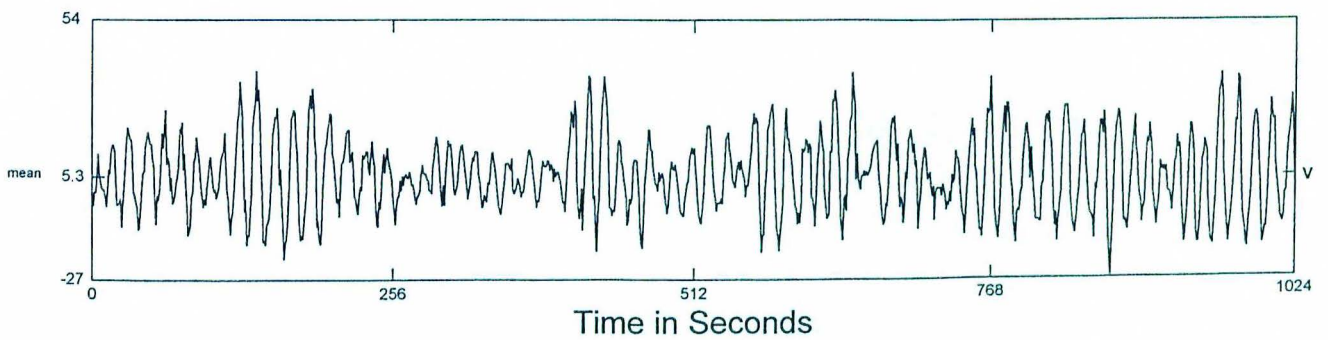
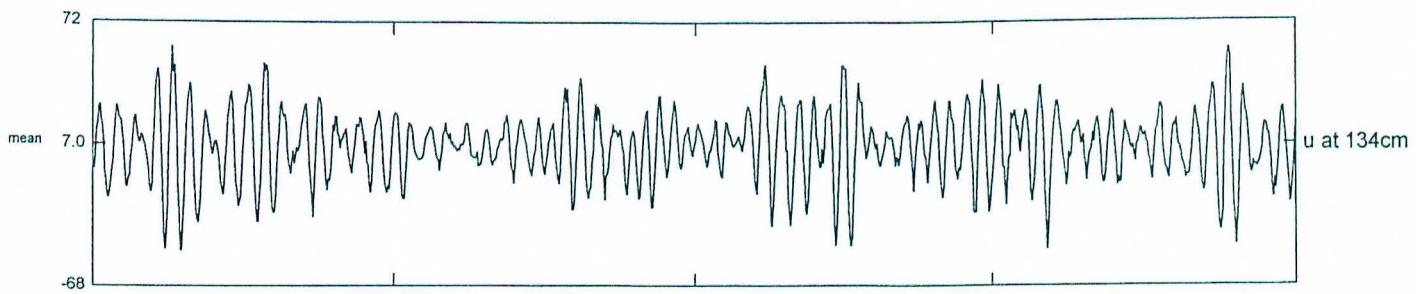
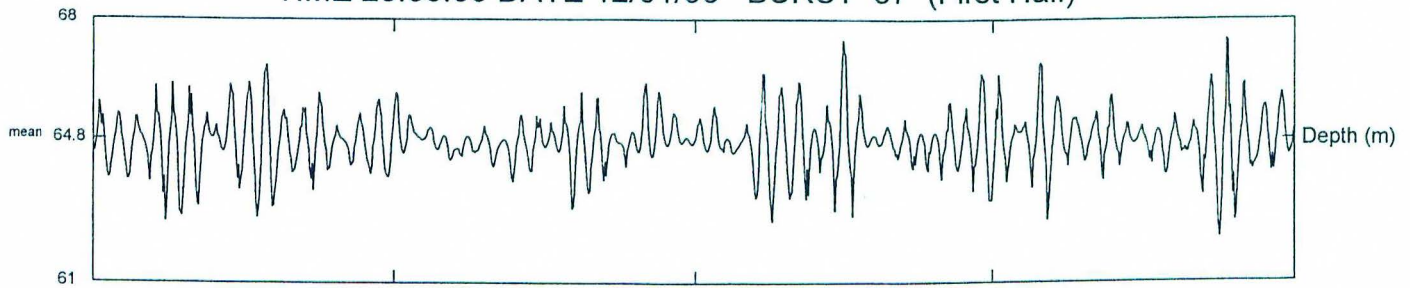
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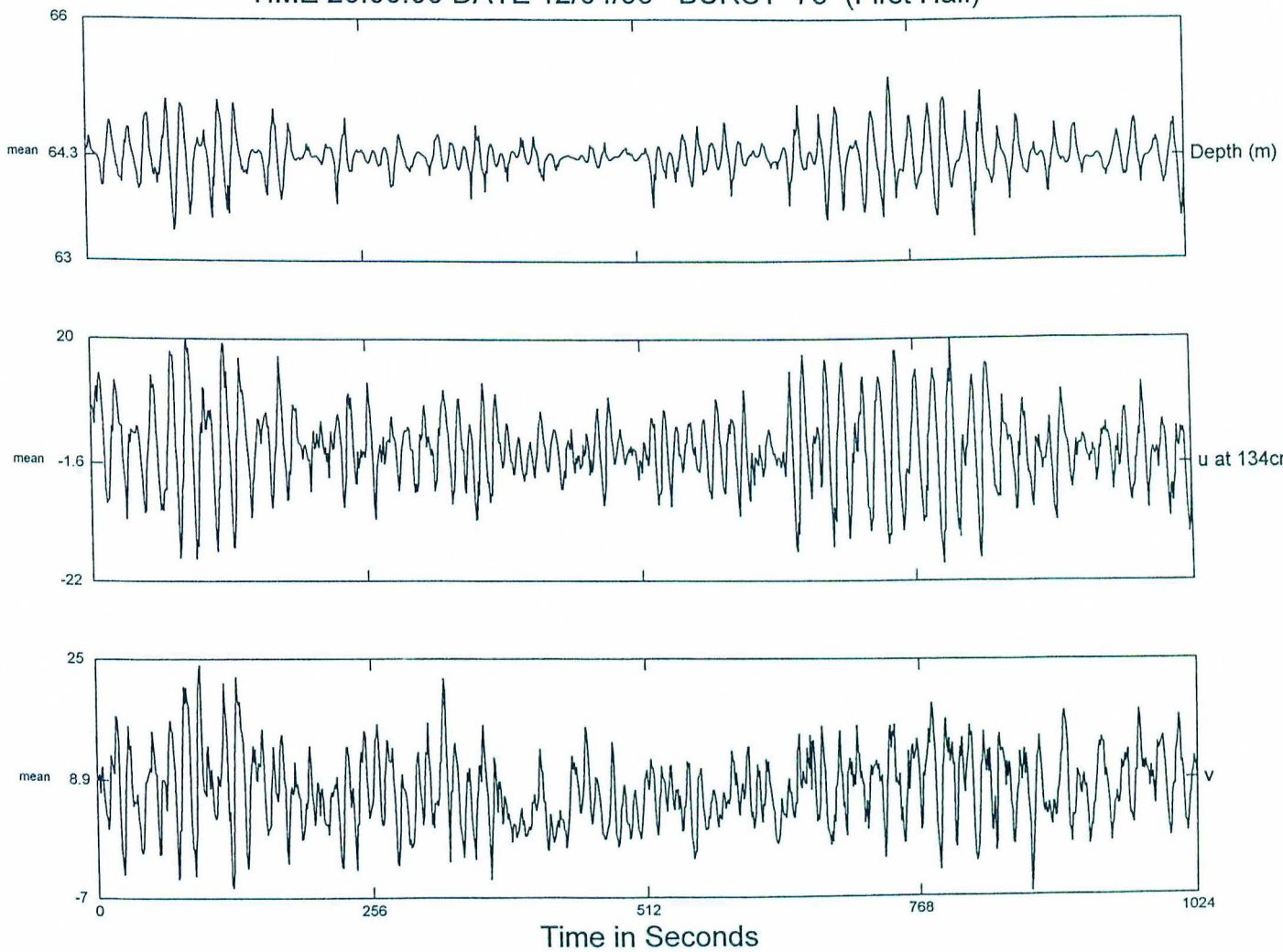
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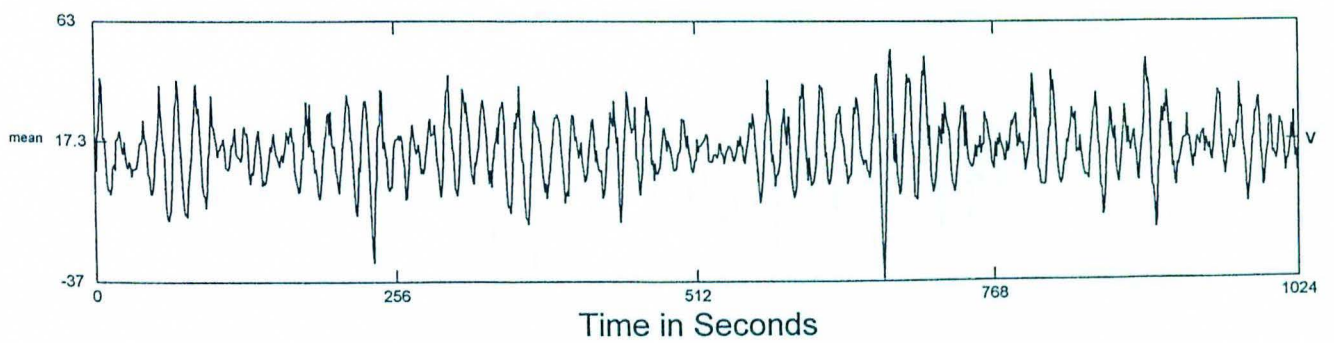
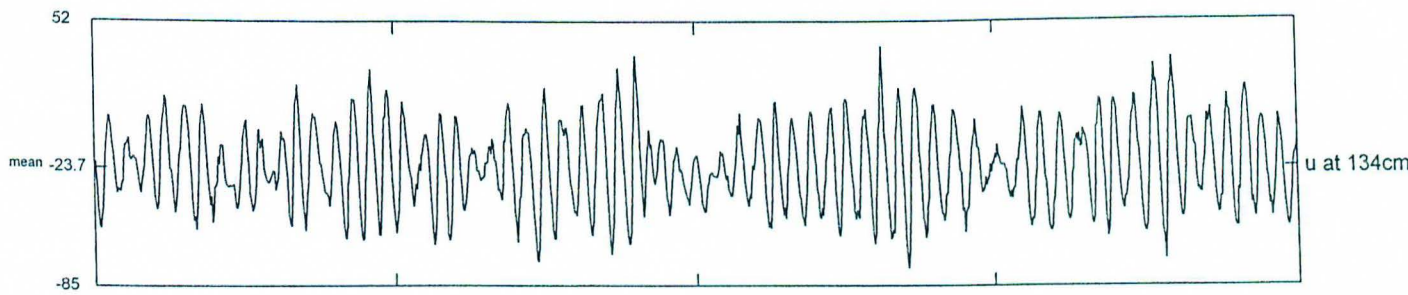
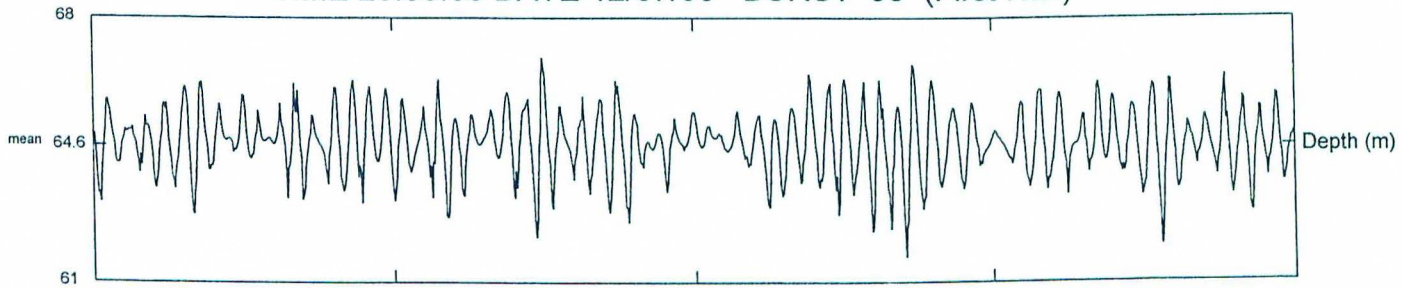
635 Burst Data from Strataform G-60 Deep Pod (u +East v +North in cm/s)
TIME 20:00:00 DATE 12/01/96 BURST 57 (First Half)



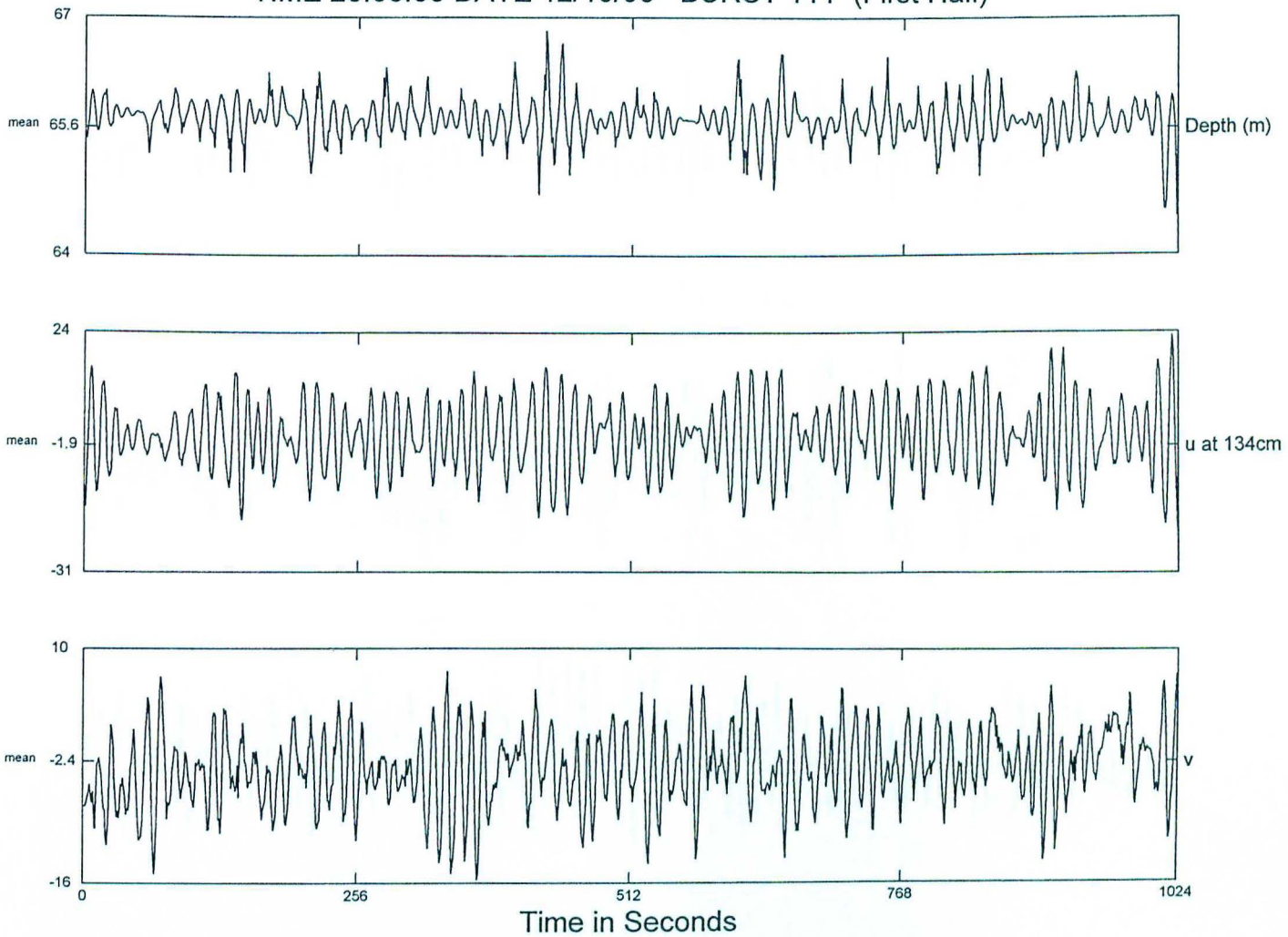
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TIME 20:00:00 DATE 12/04/96 BURST 75 (First Half)



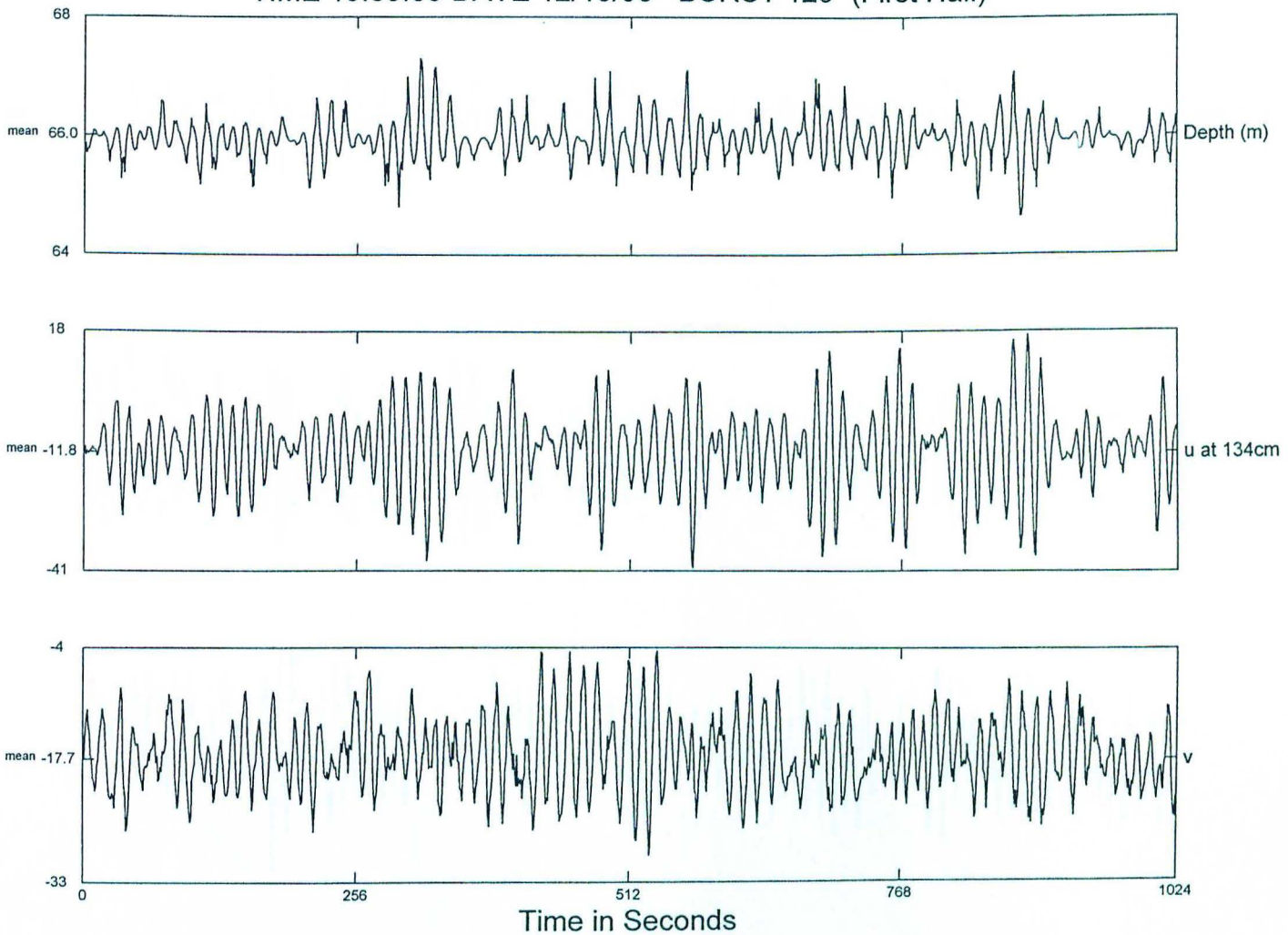
635 Burst Data from Strataform G-60 Deep Pod (u +East v +North in cm/s)
TIME 20:00:00 DATE 12/07/96 BURST 93 (First Half)



635 Burst Data from Strataform G-60 Deep Pod (u +East v +North in cm/s)
TIME 20:00:00 DATE 12/10/96 BURST 111 (First Half)

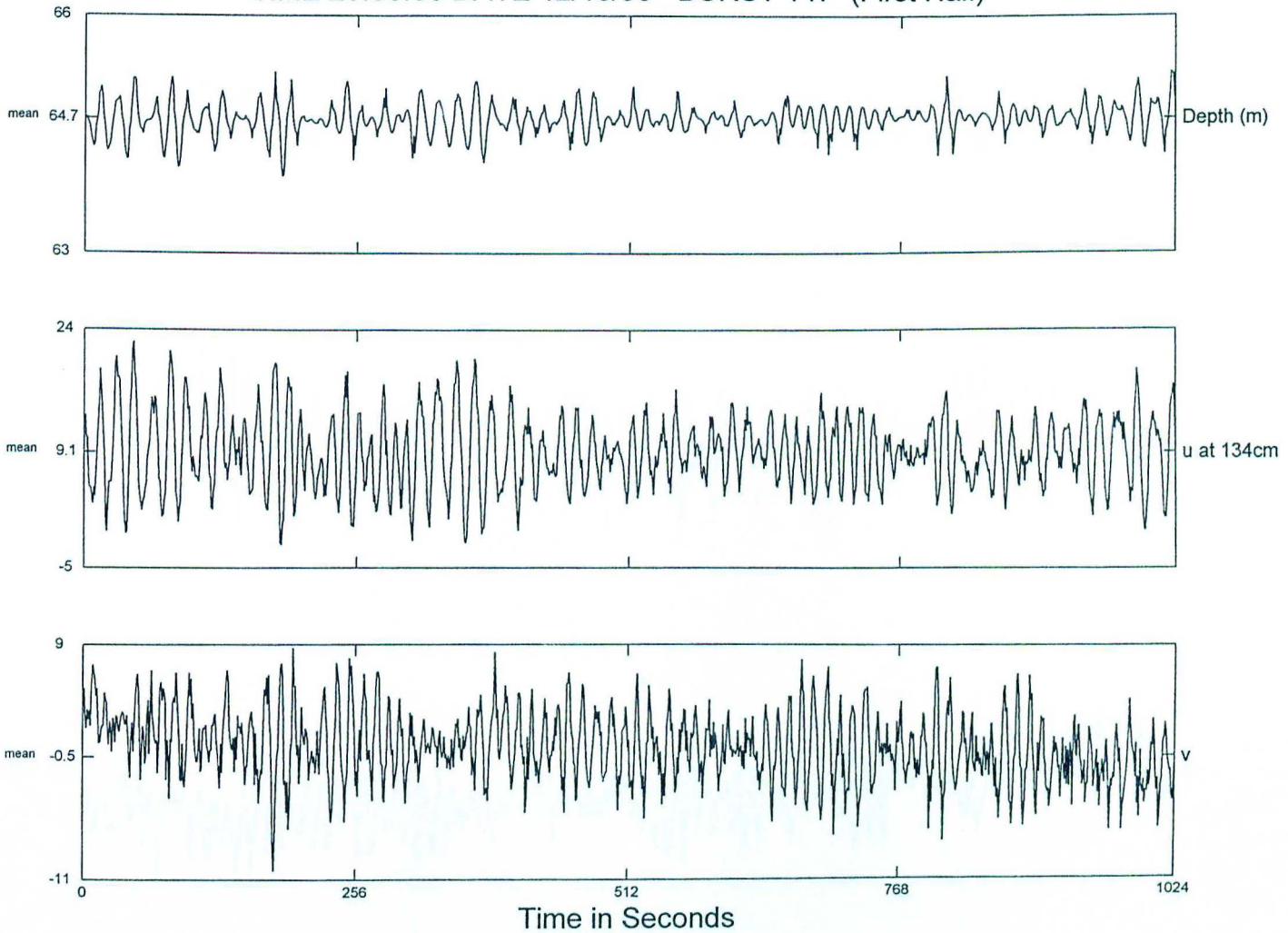


635 Burst Data from Strataform G-60 Deep Pod (u +East v +North in cm/s)
TIME 19:59:59 DATE 12/13/96 BURST 129 (First Half)

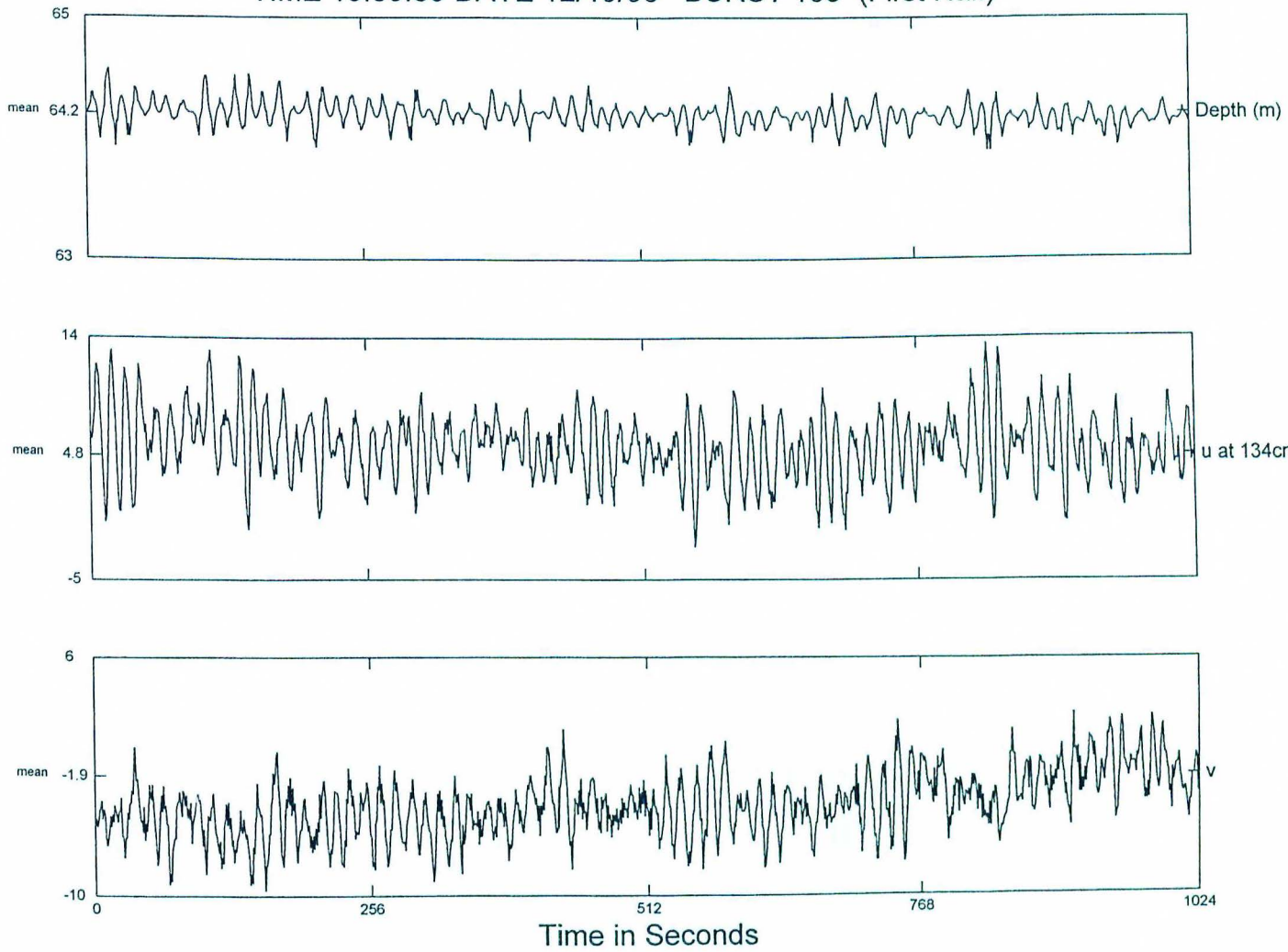




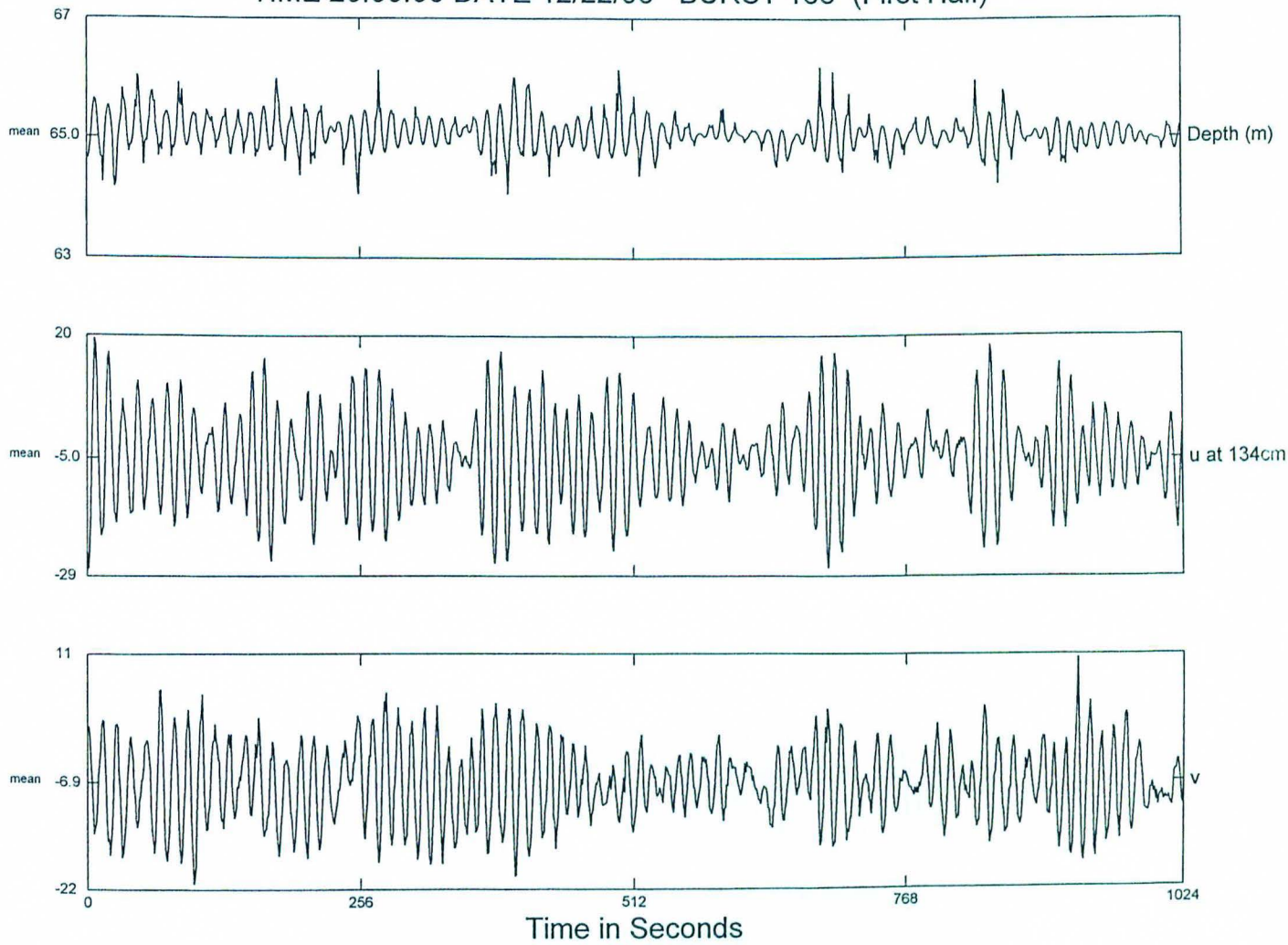
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TIME 20:00:00 DATE 12/16/96 BURST 147 (First Half)



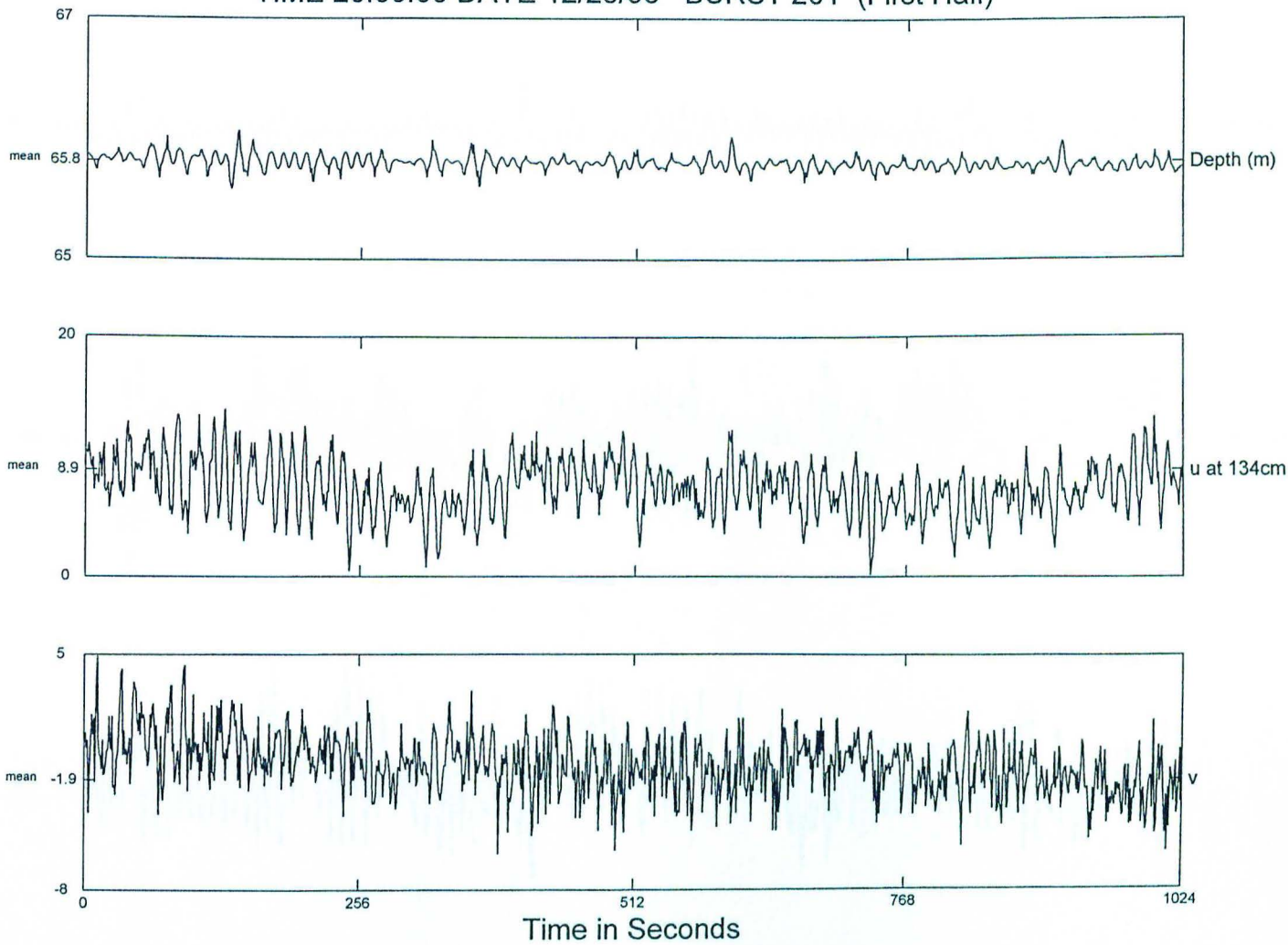
635 Burst Data from Strataform G-60 Deep Pod (u +East v +North in cm/s)
TIME 19:59:59 DATE 12/19/96 BURST 165 (First Half)



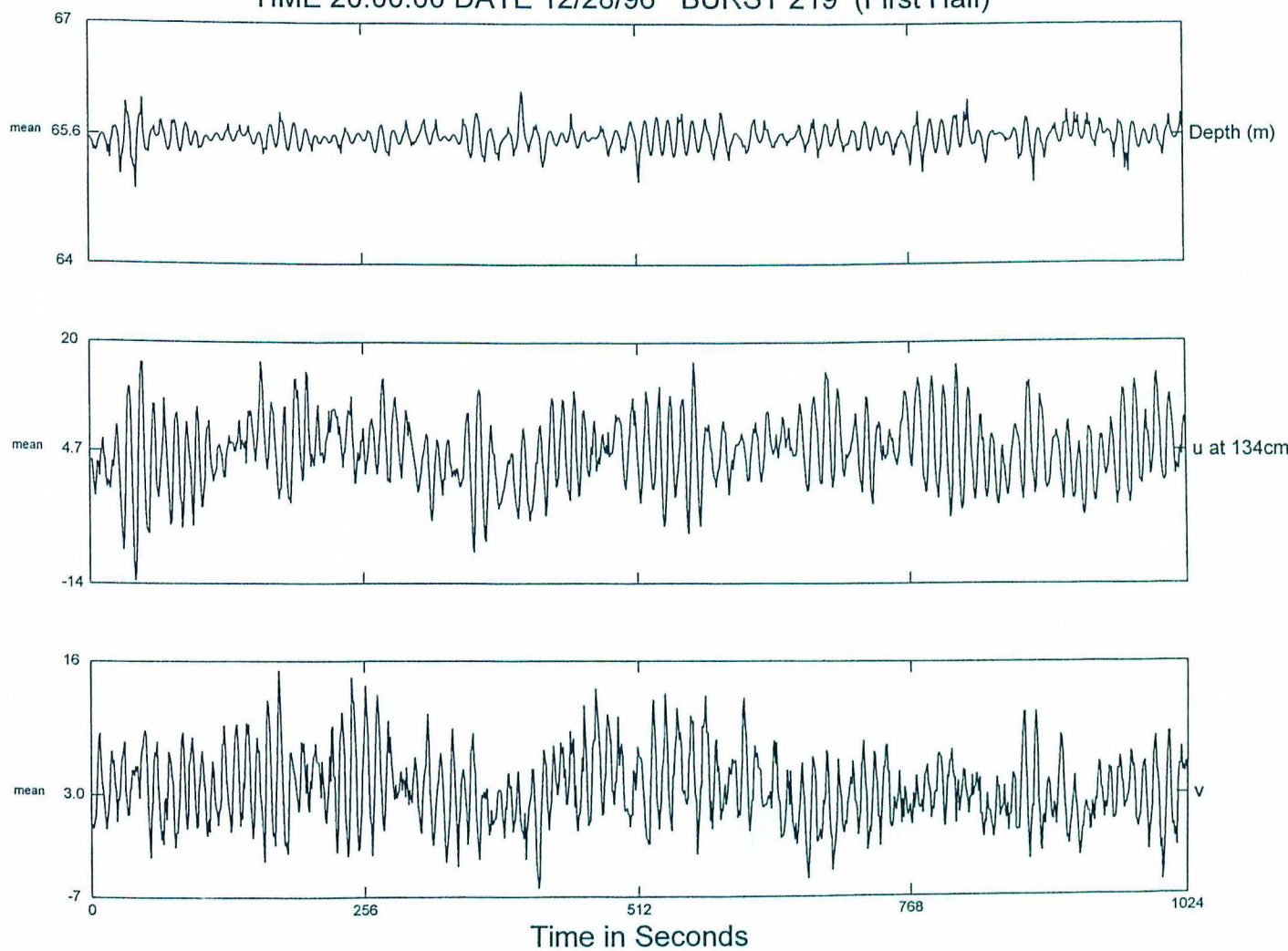
635 Burst Data from Strataform G-60 Deep Pod (u +East v +North in cm/s)
TIME 20:00:00 DATE 12/22/96 BURST 183 (First Half)



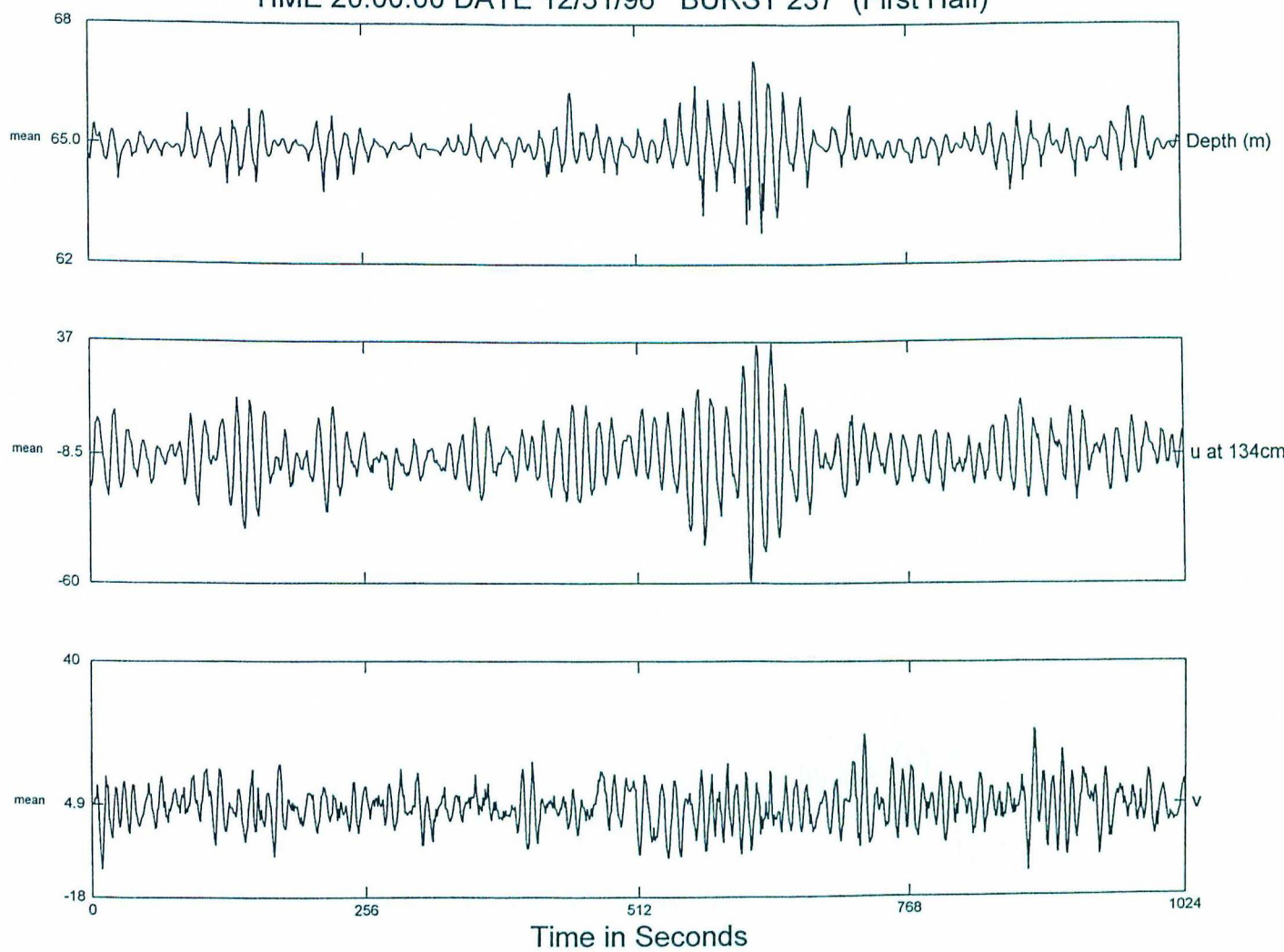
635 Burst Data from Strataform G-60 Deep Pod (u +East v +North in cm/s)
TIME 20:00:00 DATE 12/25/96 BURST 201 (First Half)



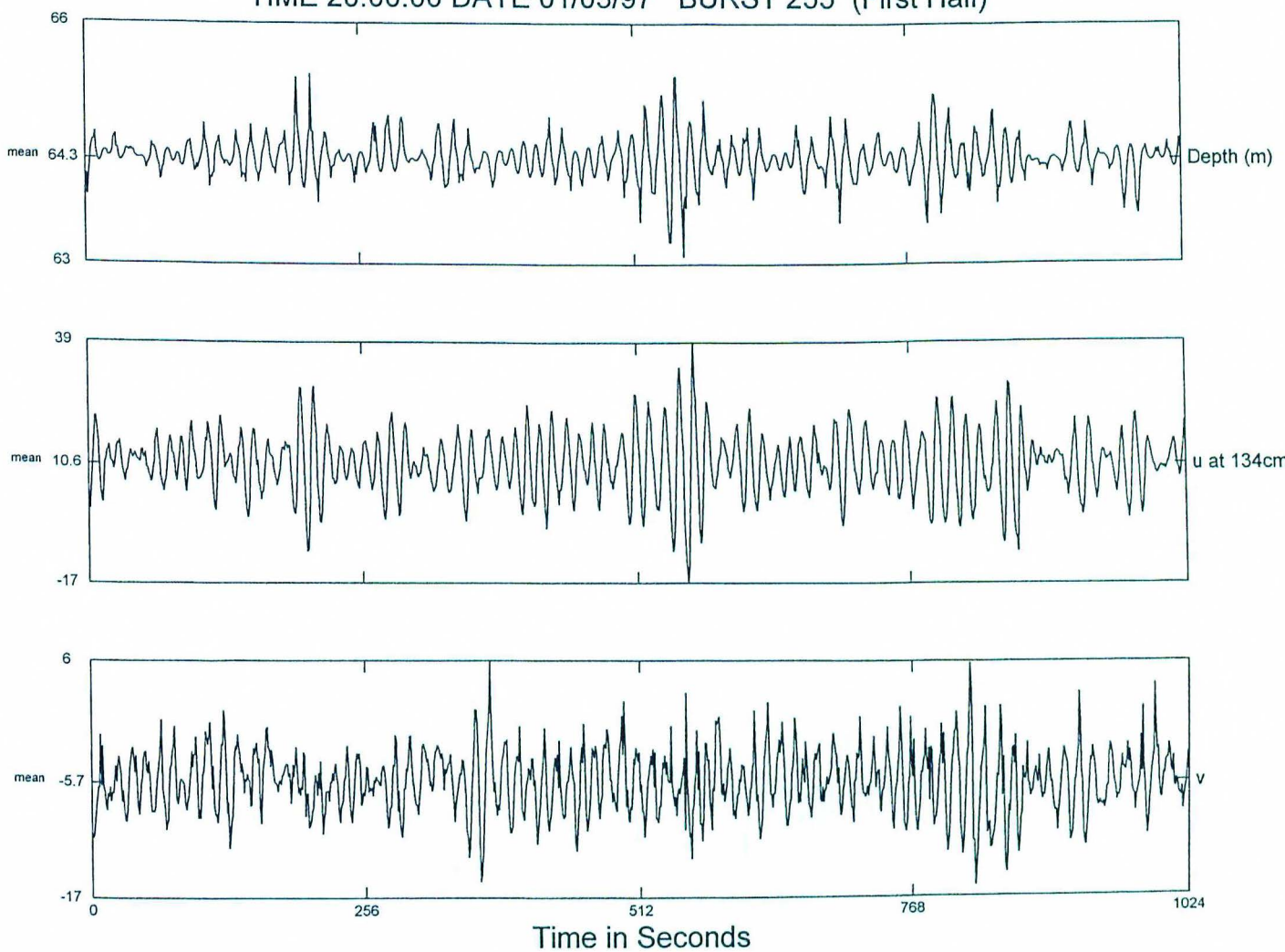
635 Burst Data from Strataform G-60 Deep Pod (u +East v +North in cm/s)
TIME 20:00:00 DATE 12/28/96 BURST 219 (First Half)



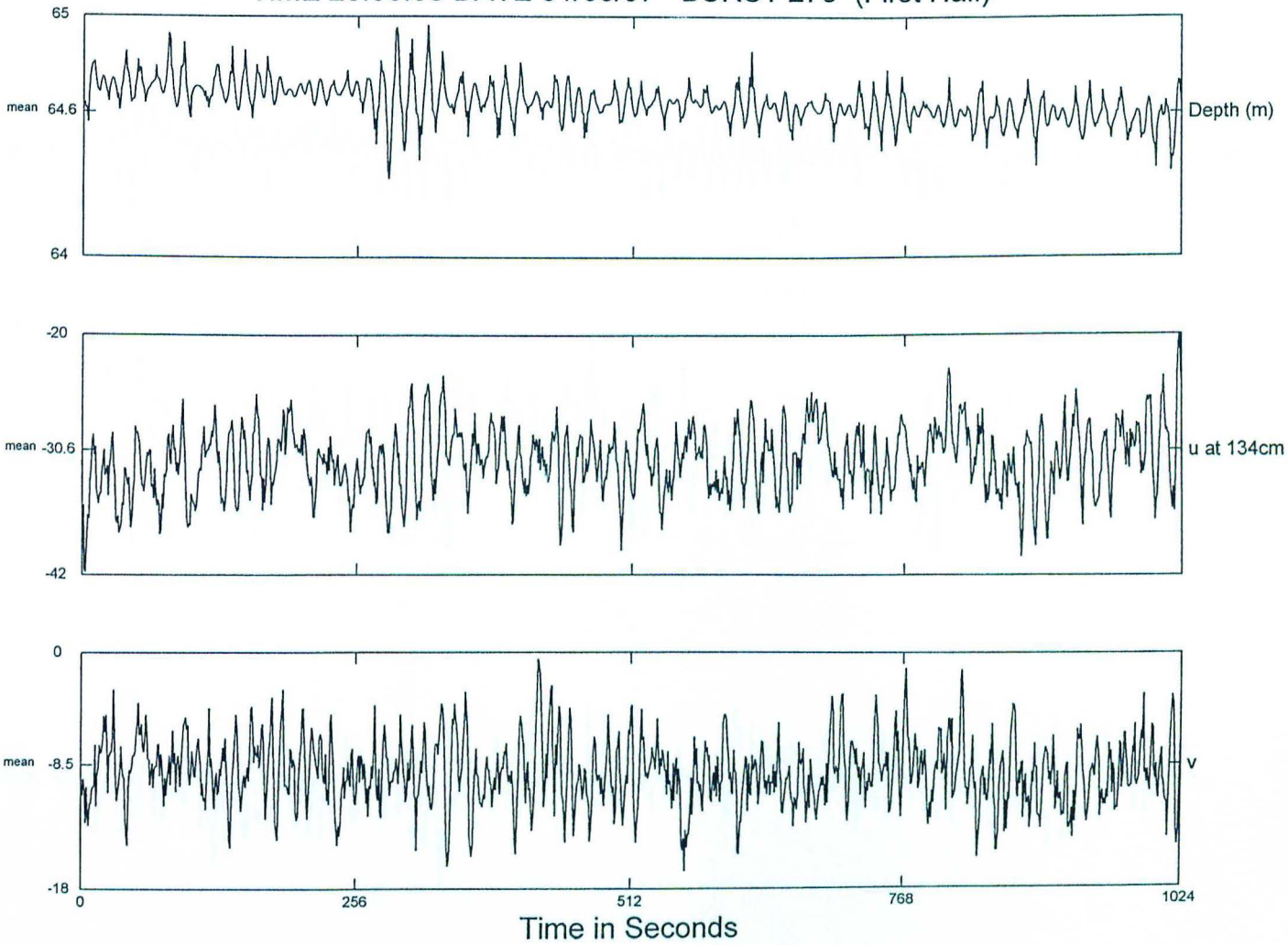
635 Burst Data from Strataform G-60 Deep Pod (u +East v +North in cm/s)
TIME 20:00:00 DATE 12/31/96 BURST 237 (First Half)



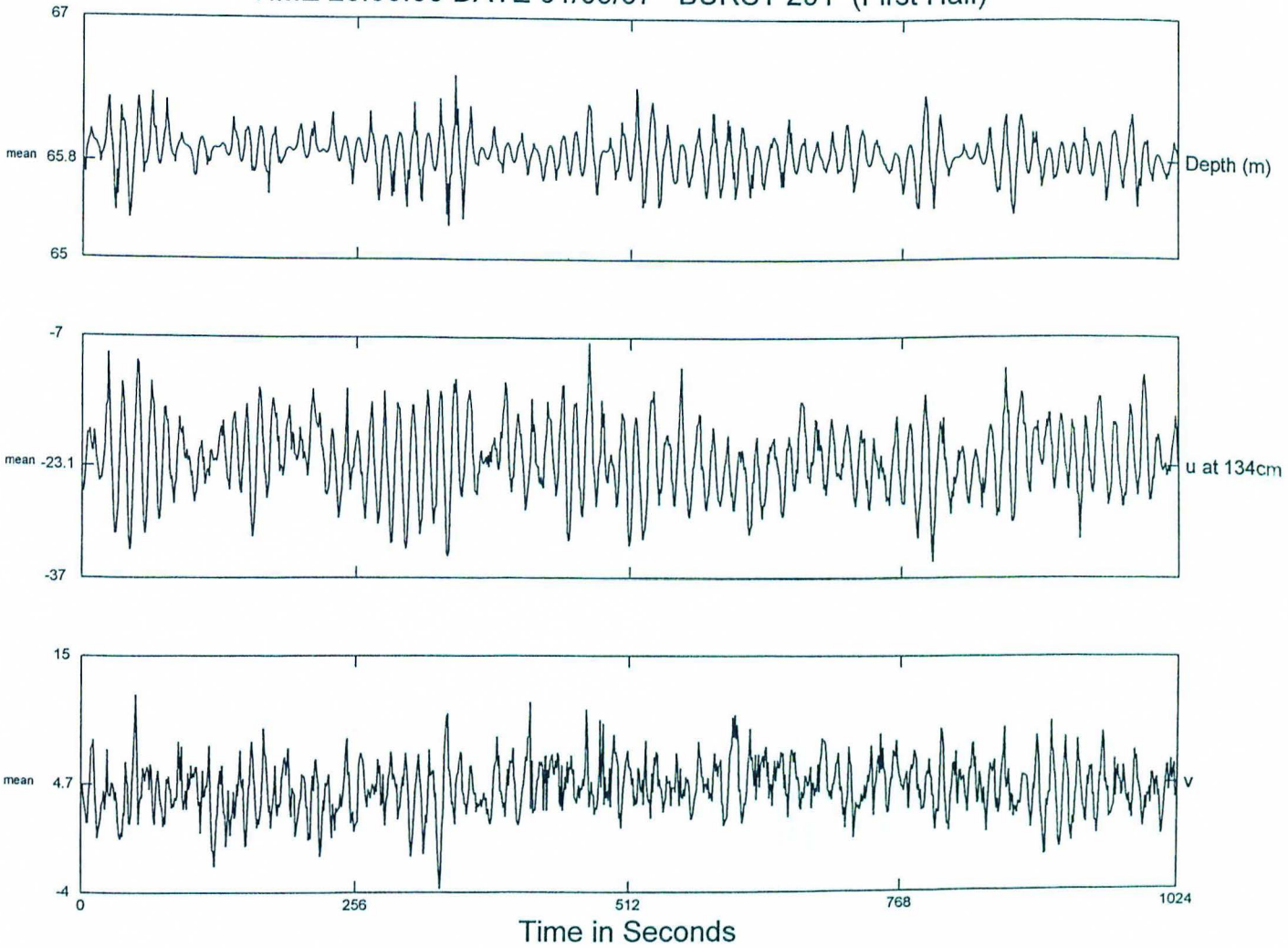
635 Burst Data from Strataform G-60 Deep Pod (u +East v +North in cm/s)
TIME 20:00:00 DATE 01/03/97 BURST 255 (First Half)



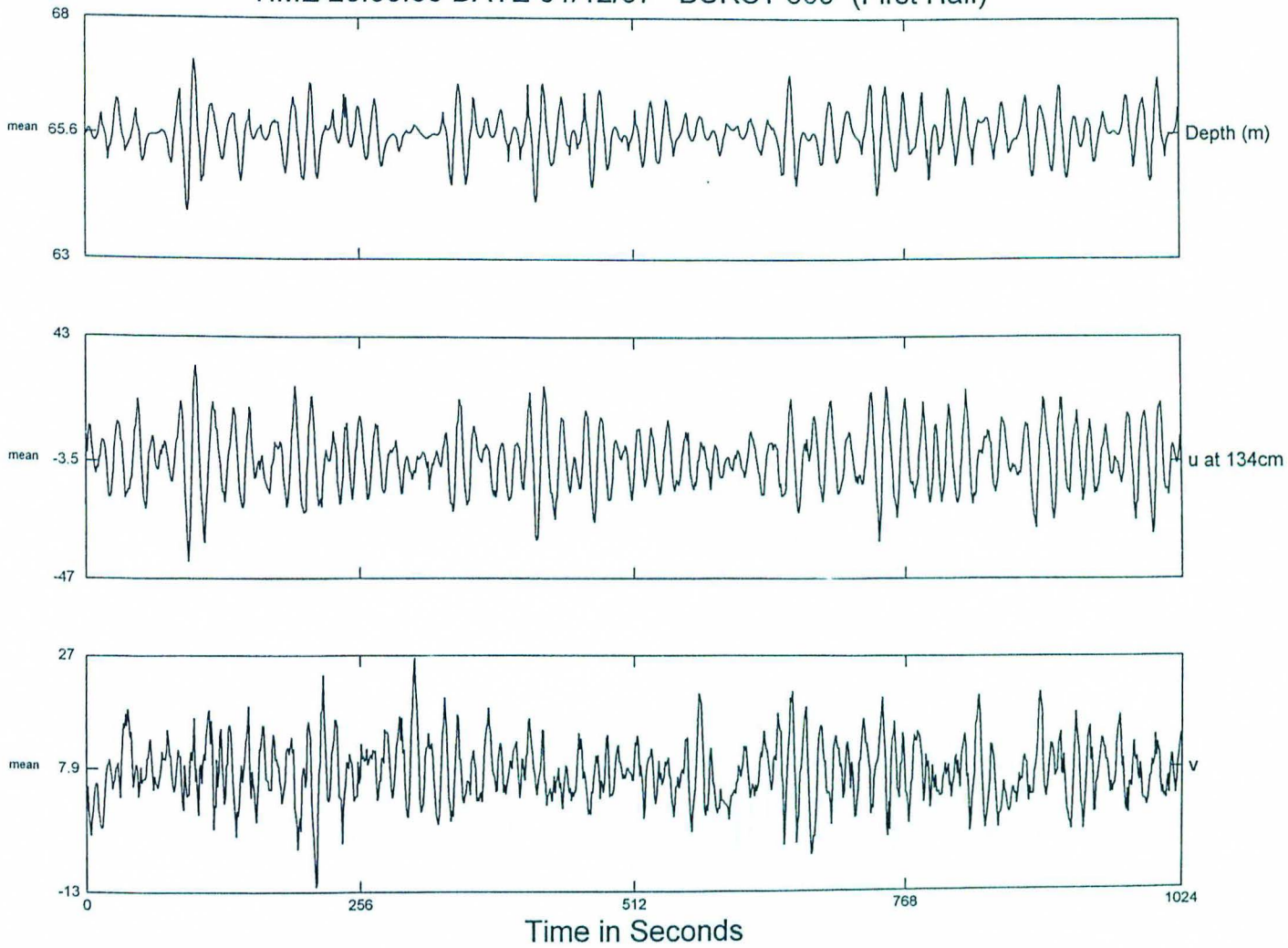
635 Burst Data from Strataform G-60 Deep Pod (u +East v +North in cm/s)
TIME 20:00:00 DATE 01/06/97 BURST 273 (First Half)



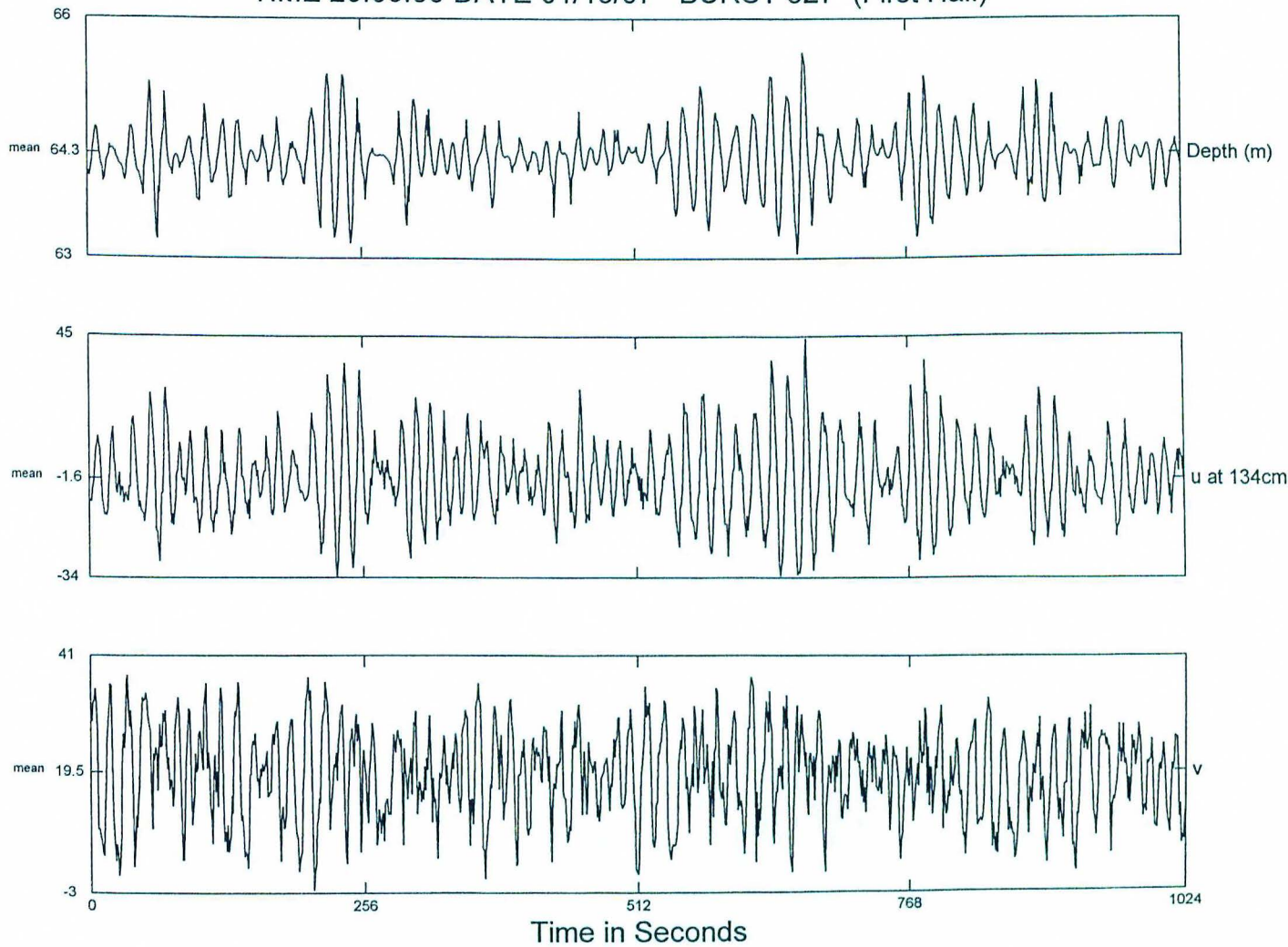
635 Burst Data from Strataform G-60 Deep Pod (u +East v +North in cm/s)
TIME 20:00:00 DATE 01/09/97 BURST 291 (First Half)



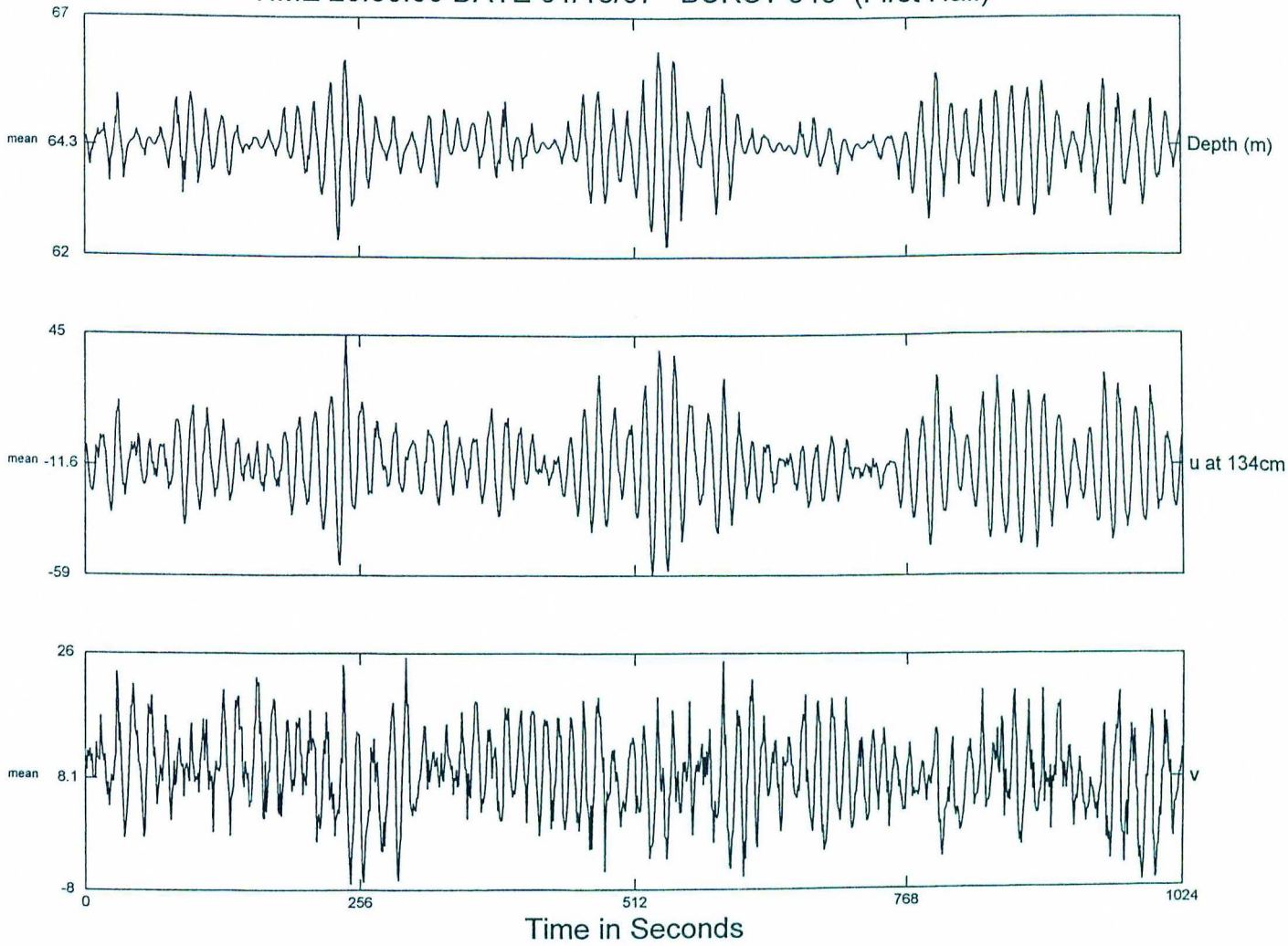
635 Burst Data from Strataform G-60 Deep Pod (u +East v +North in cm/s)
TIME 20:00:00 DATE 01/12/97 BURST 309 (First Half)



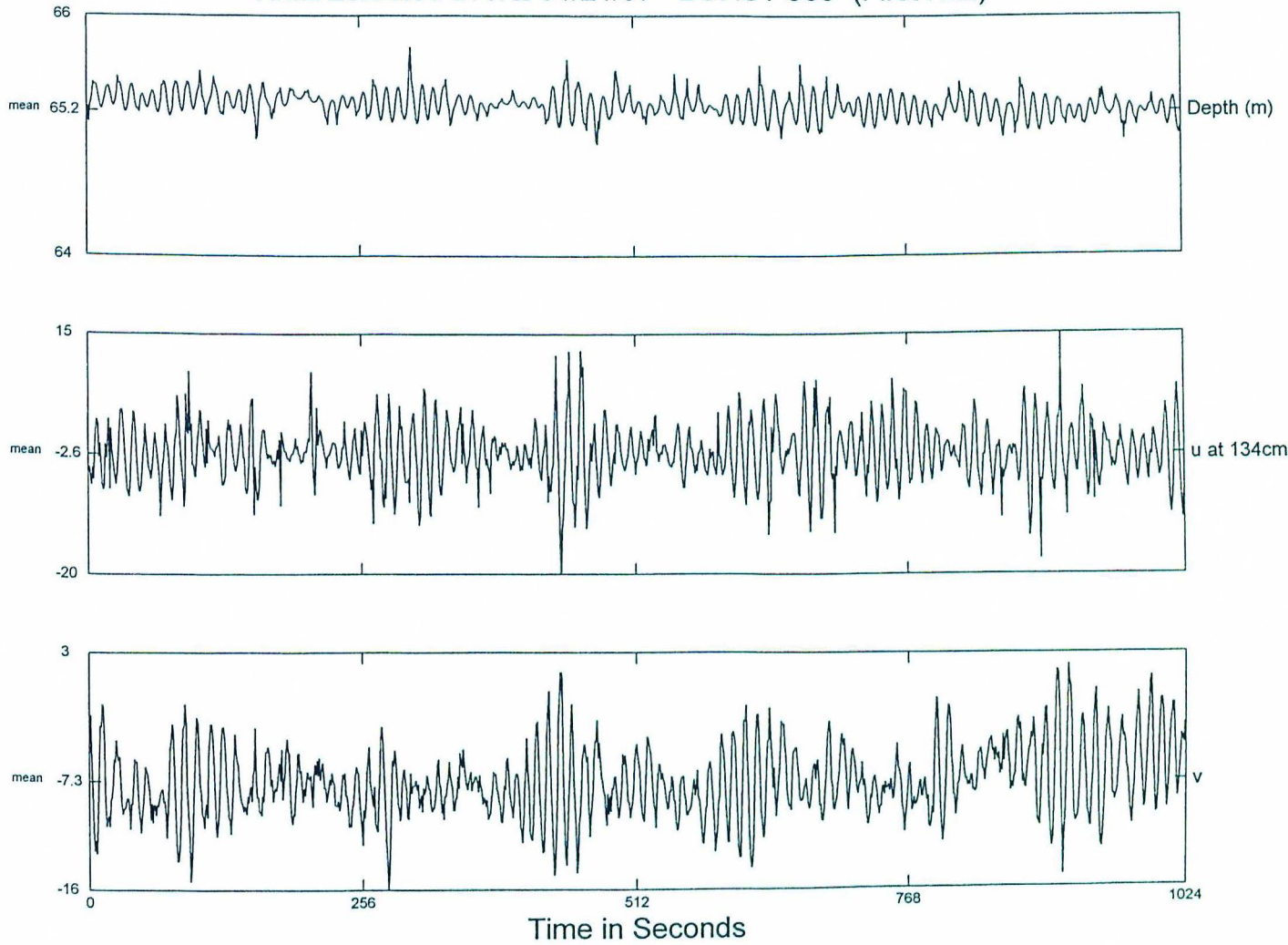
635 Burst Data from Strataform G-60 Deep Pod (u +East v +North in cm/s)
TIME 20:00:00 DATE 01/15/97 BURST 327 (First Half)



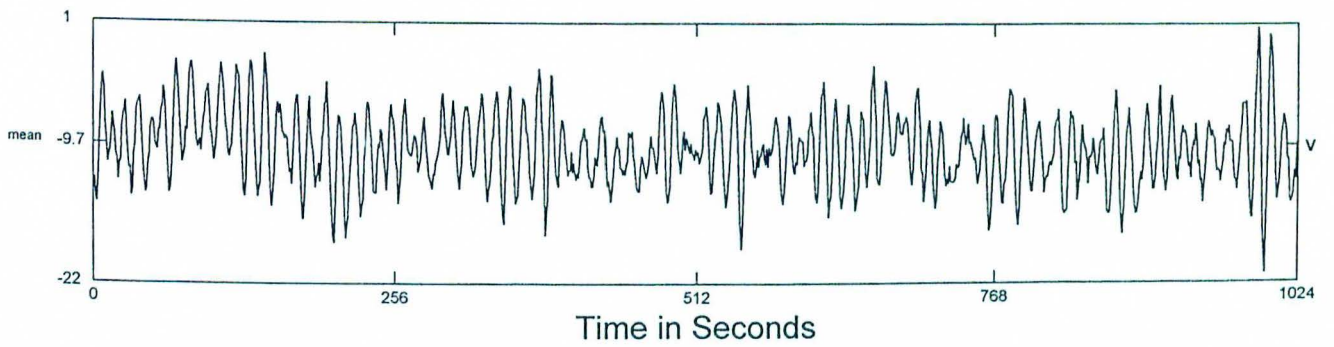
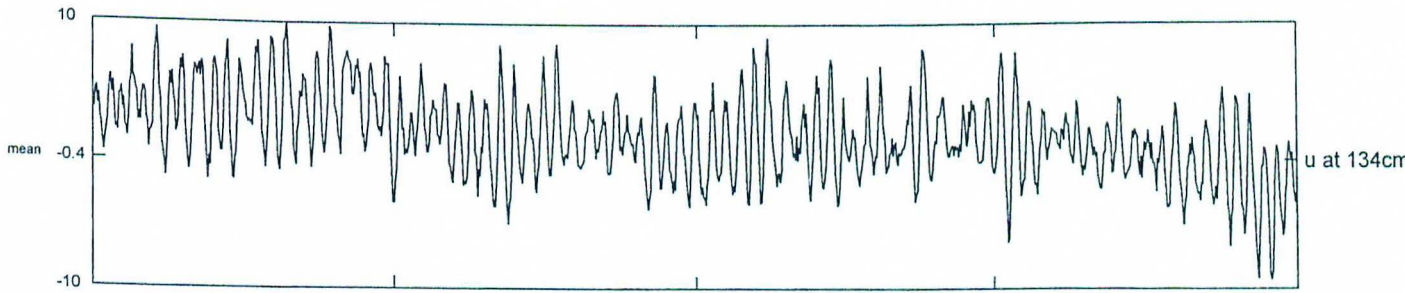
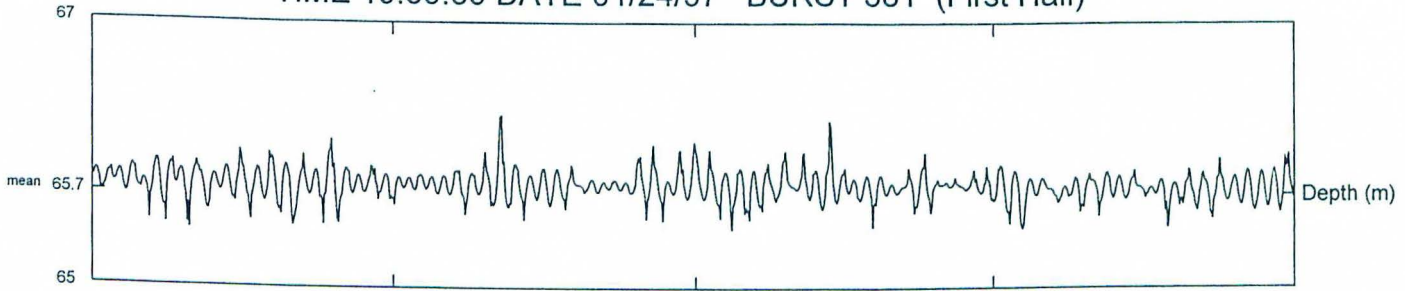
635 Burst Data from Strataform G-60 Deep Pod (u +East v +North in cm/s)
TIME 20:00:00 DATE 01/18/97 BURST 345 (First Half)



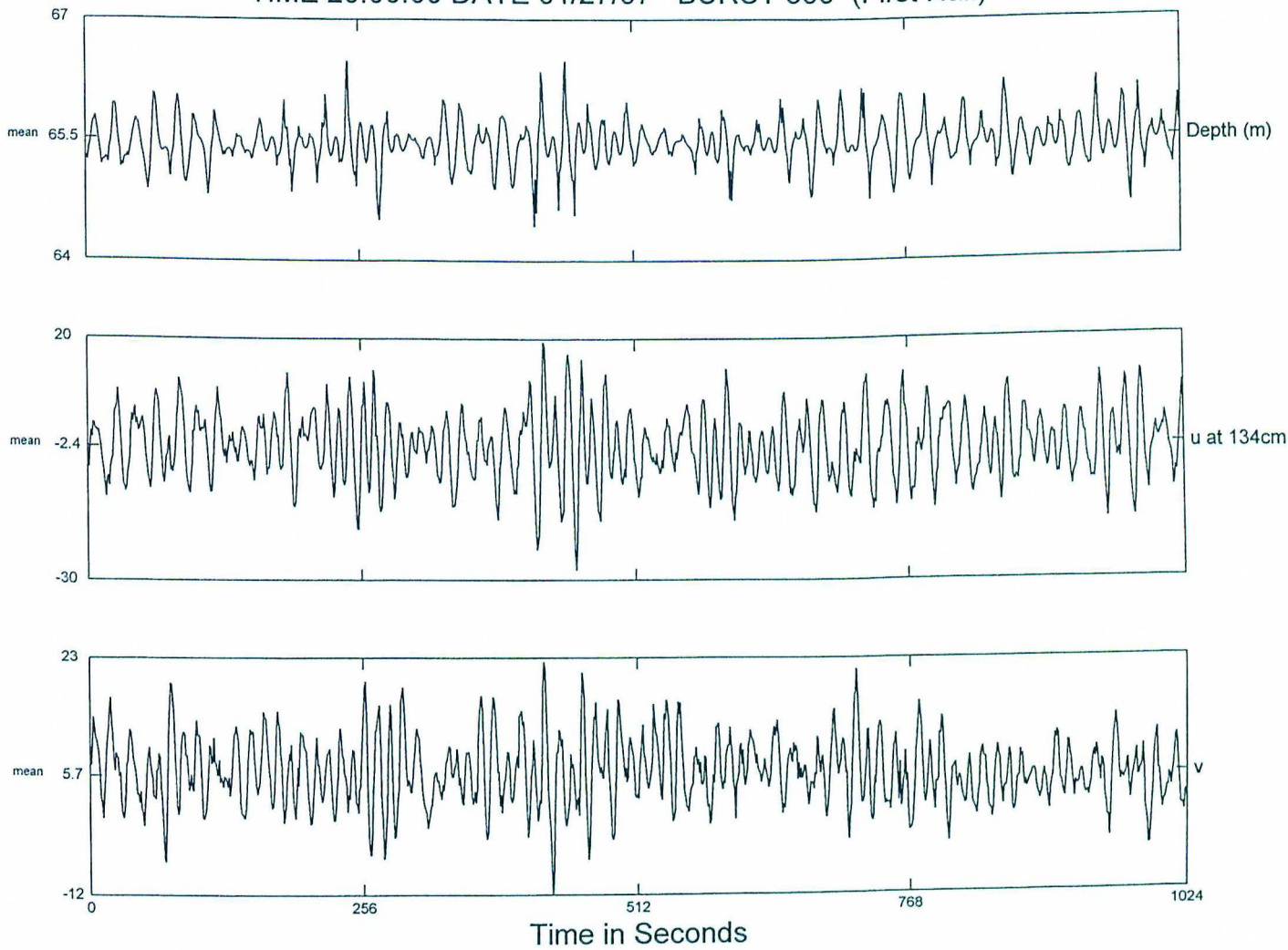
635 Burst Data from Strataform G-60 Deep Pod (u +East v +North in cm/s)
TIME 20:00:00 DATE 01/21/97 BURST 363 (First Half)



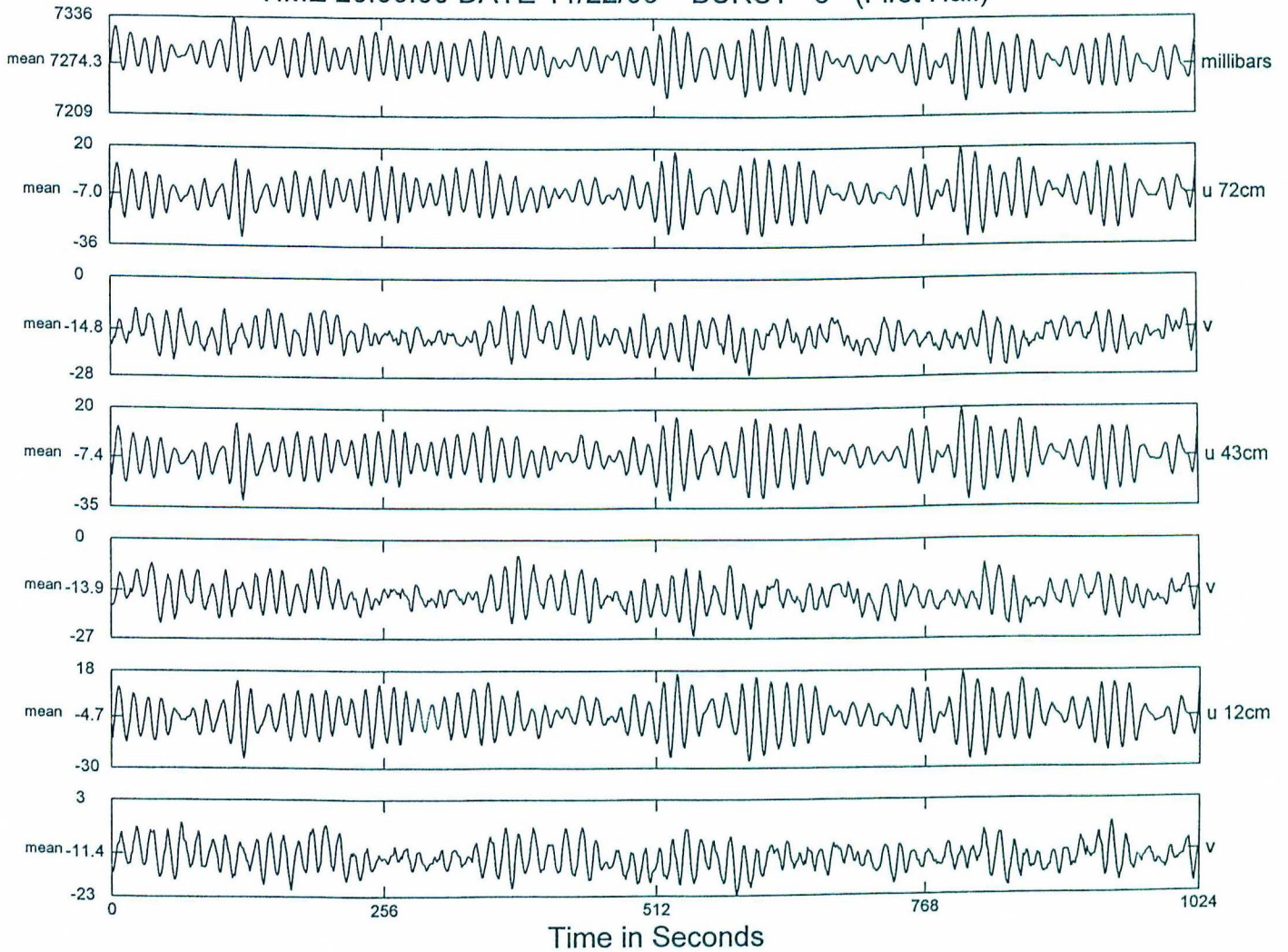
635 Burst Data from Strataform G-60 Deep Pod (u +East v +North in cm/s)
TIME 19:59:59 DATE 01/24/97 BURST 381 (First Half)



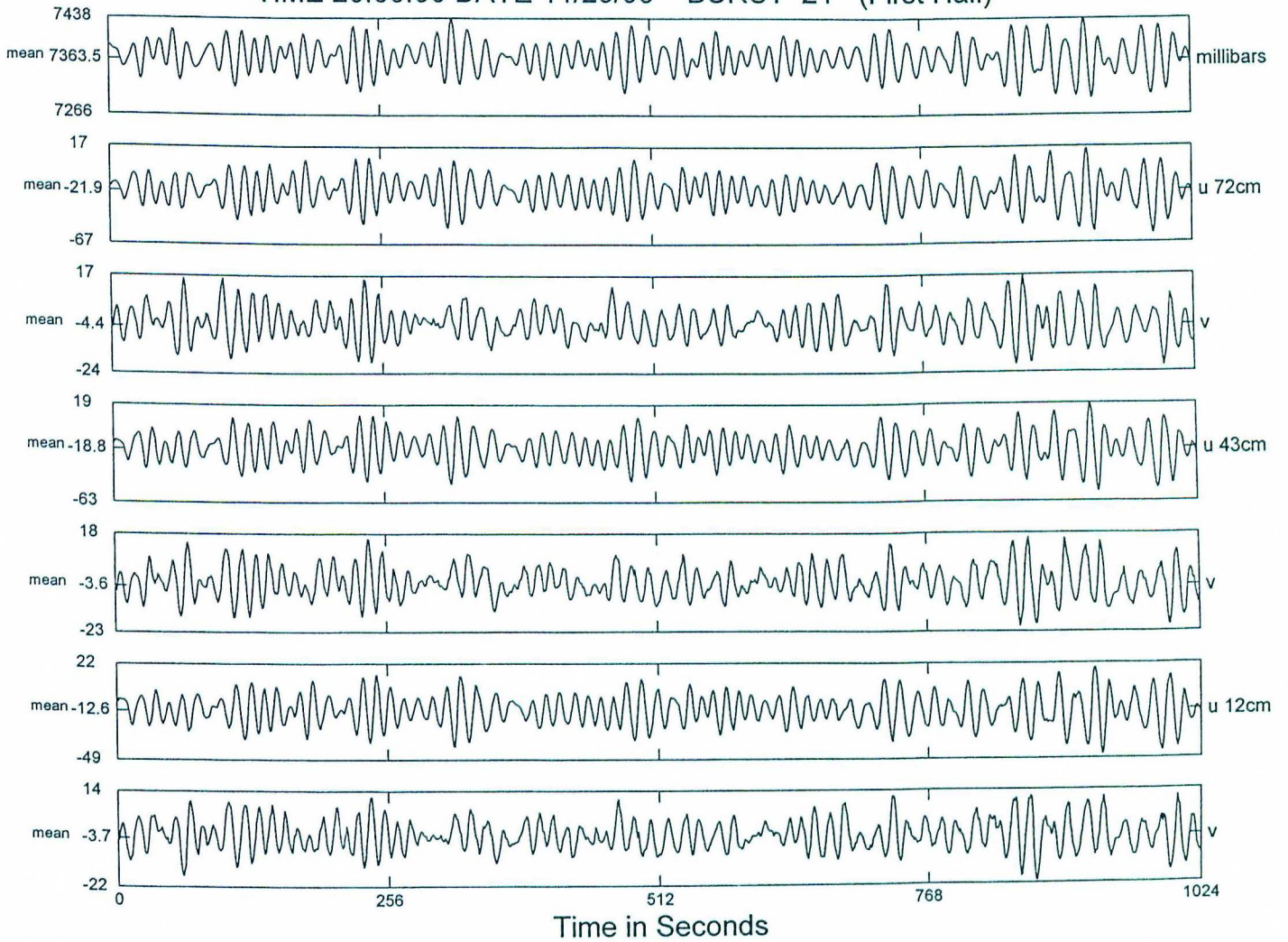
635 Burst Data from Strataform G-60 Deep Pod (u +East v +North in cm/s)
TIME 20:00:00 DATE 01/27/97 BURST 399 (First Half)



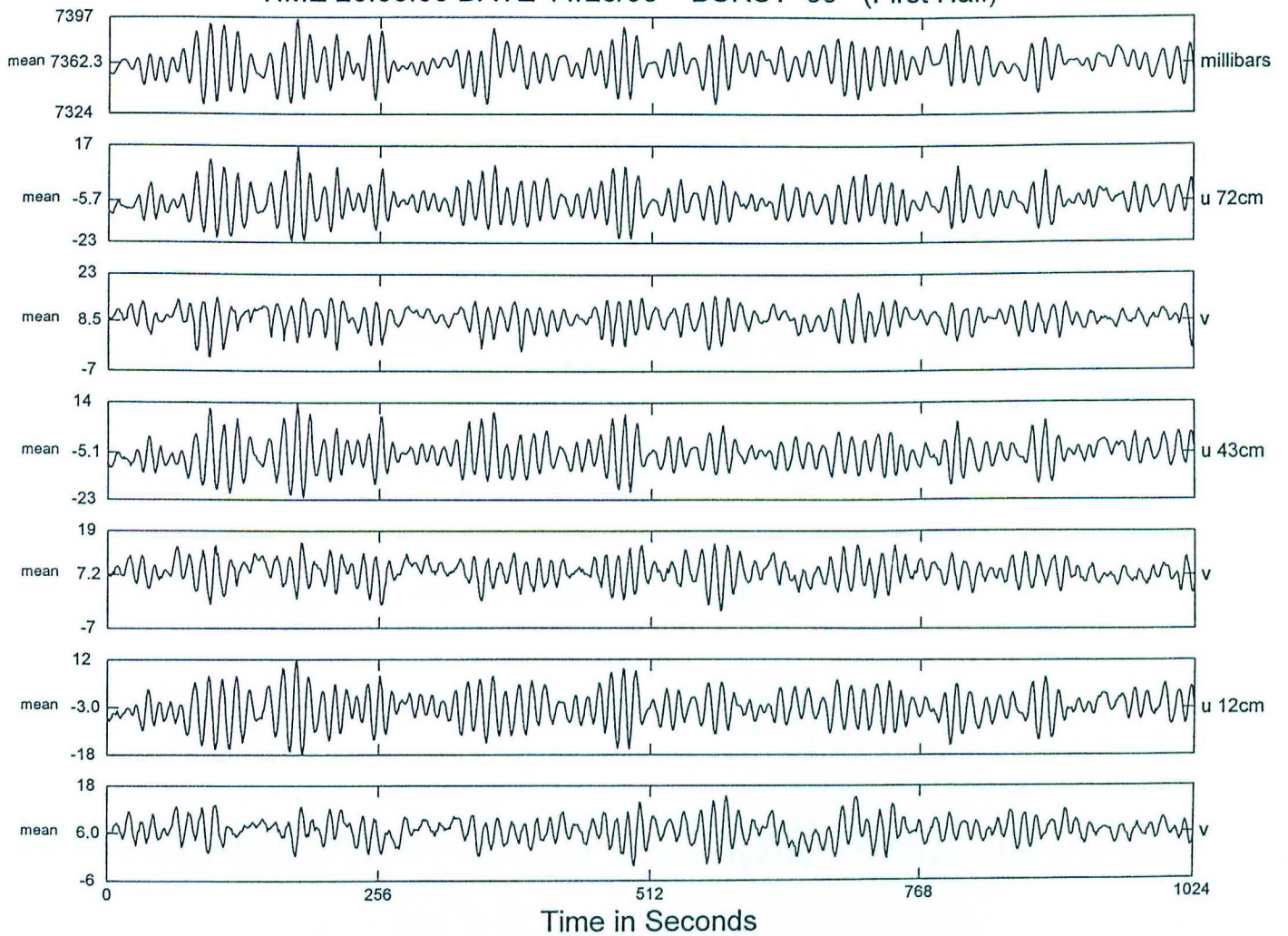
626 Burst Data from Strataform G-60 Deep Pod (u +East v +North in cm/s)
TIME 20:00:00 DATE 11/22/96 BURST 3 (First Half)



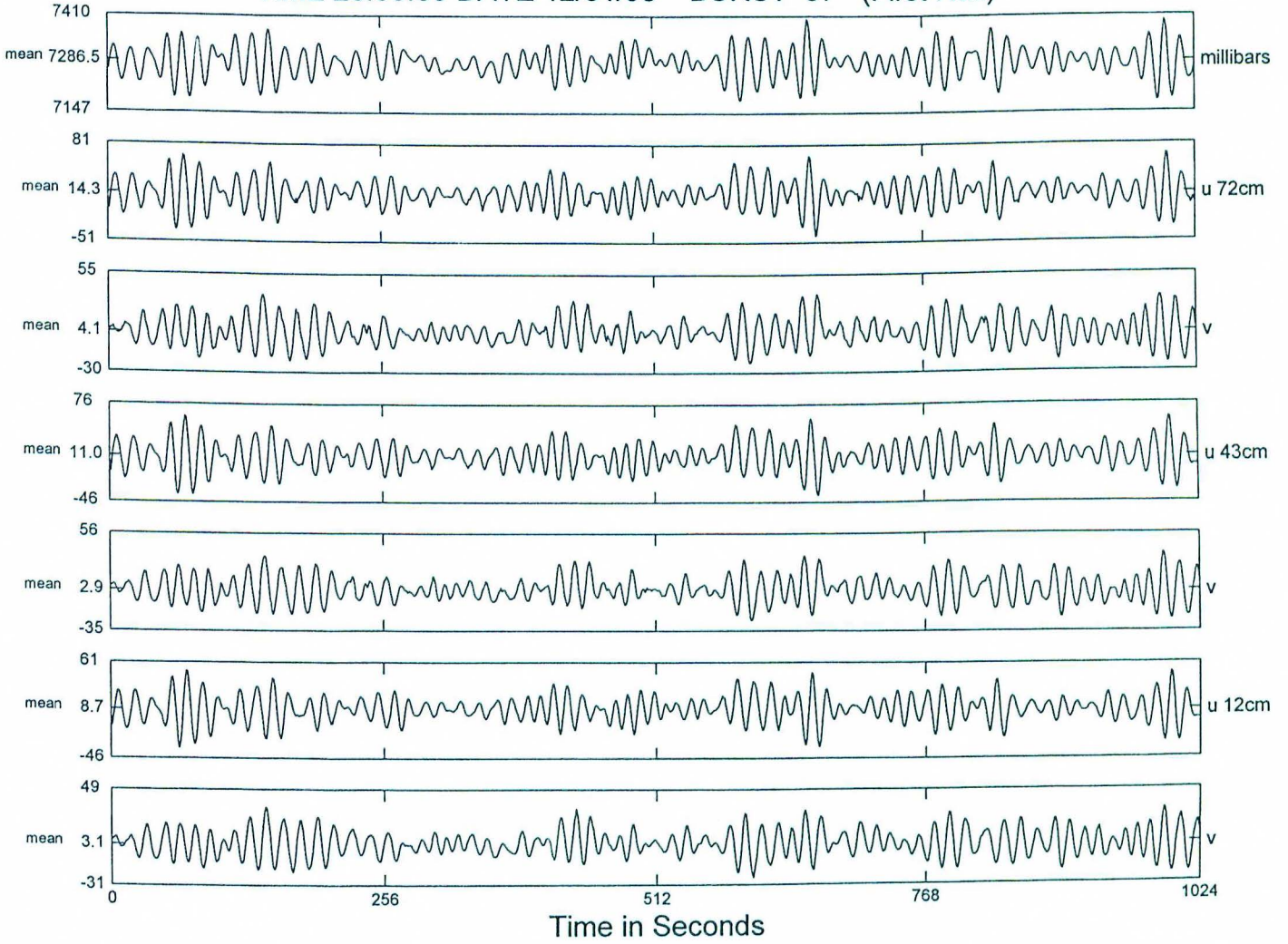
626 Burst Data from Strataform G-60 Deep Pod (u +East v +North in cm/s)
TIME 20:00:00 DATE 11/25/96 BURST 21 (First Half)



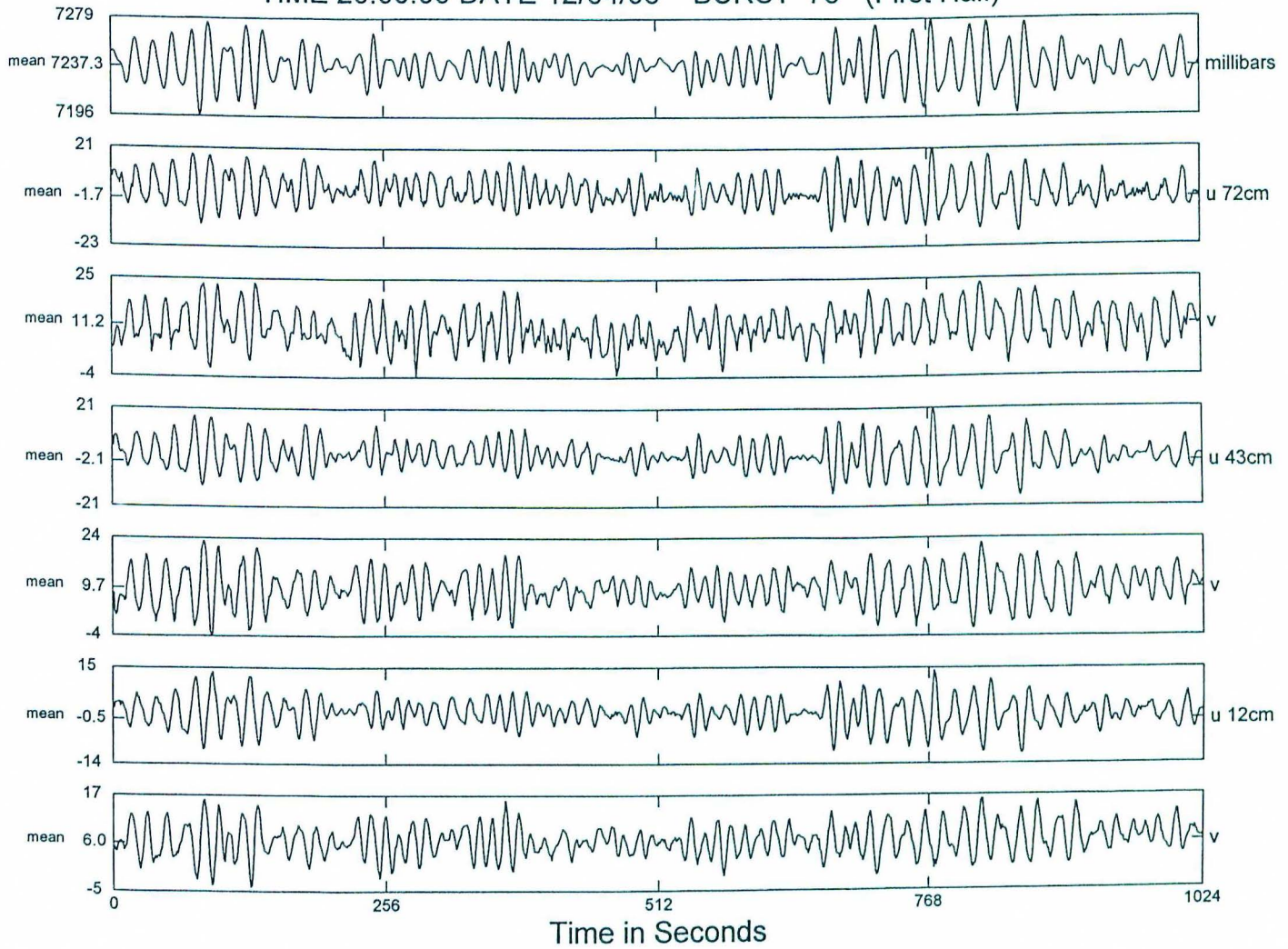
626 Burst Data from Strataform G-60 Deep Pod (u +East v +North in cm/s)
TIME 20:00:00 DATE 11/28/96 BURST 39 (First Half)



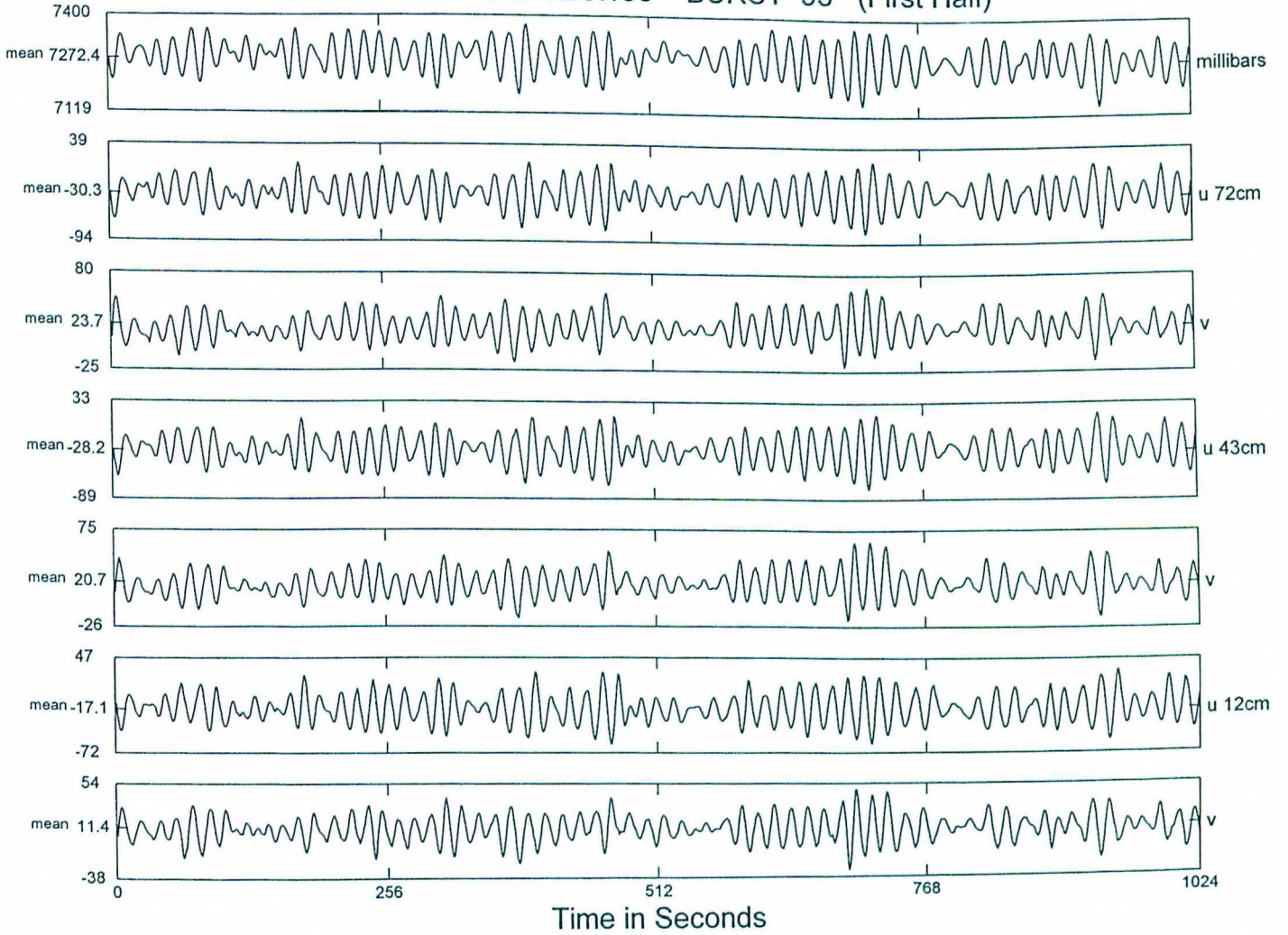
626 Burst Data from Strataform G-60 Deep Pod (u +East v +North in cm/s)
TIME 20:00:00 DATE 12/01/96 BURST 57 (First Half)



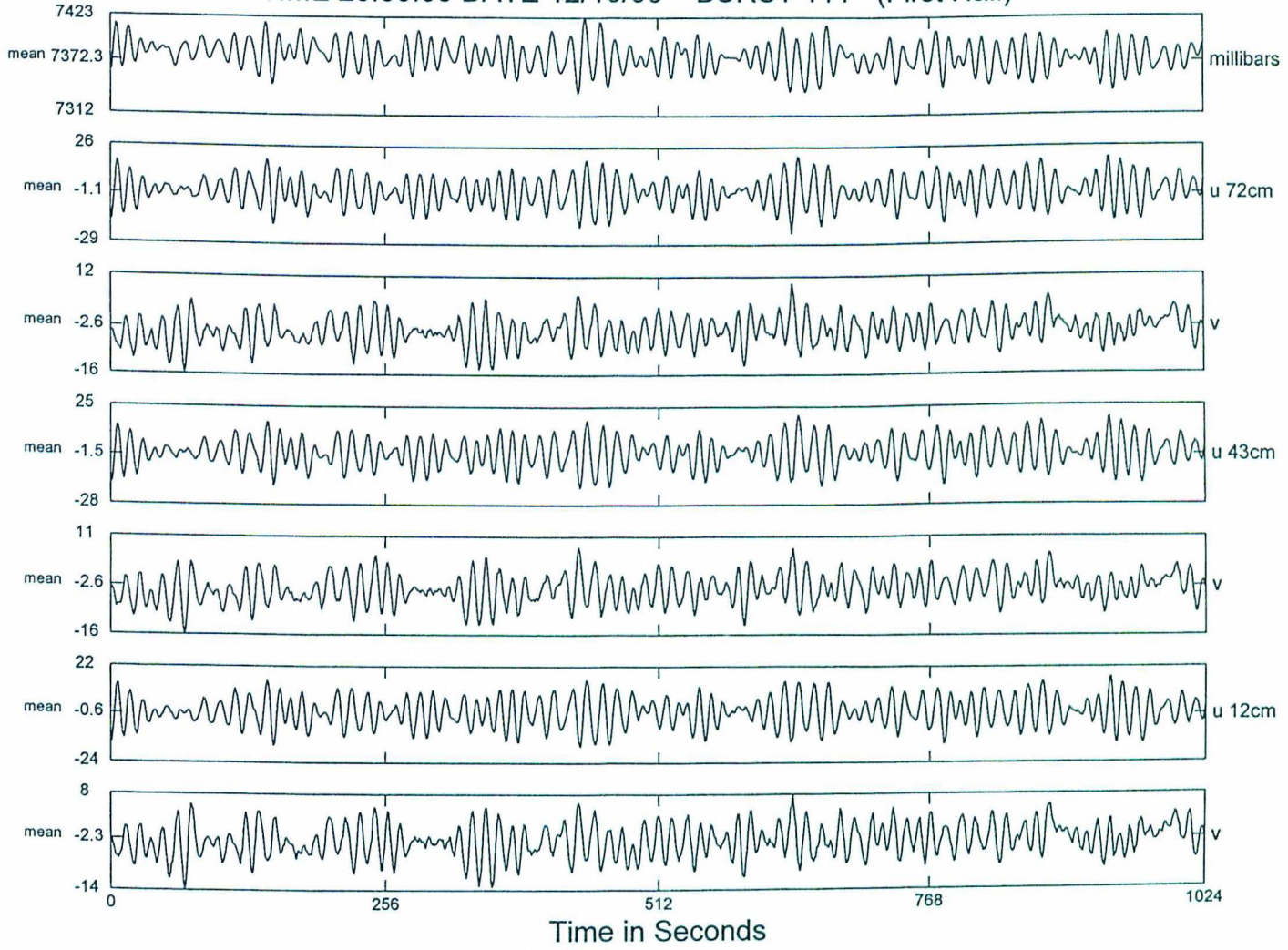
626 Burst Data from Strataform G-60 Deep Pod (u +East v +North in cm/s)
TIME 20:00:00 DATE 12/04/96 BURST 75 (First Half)



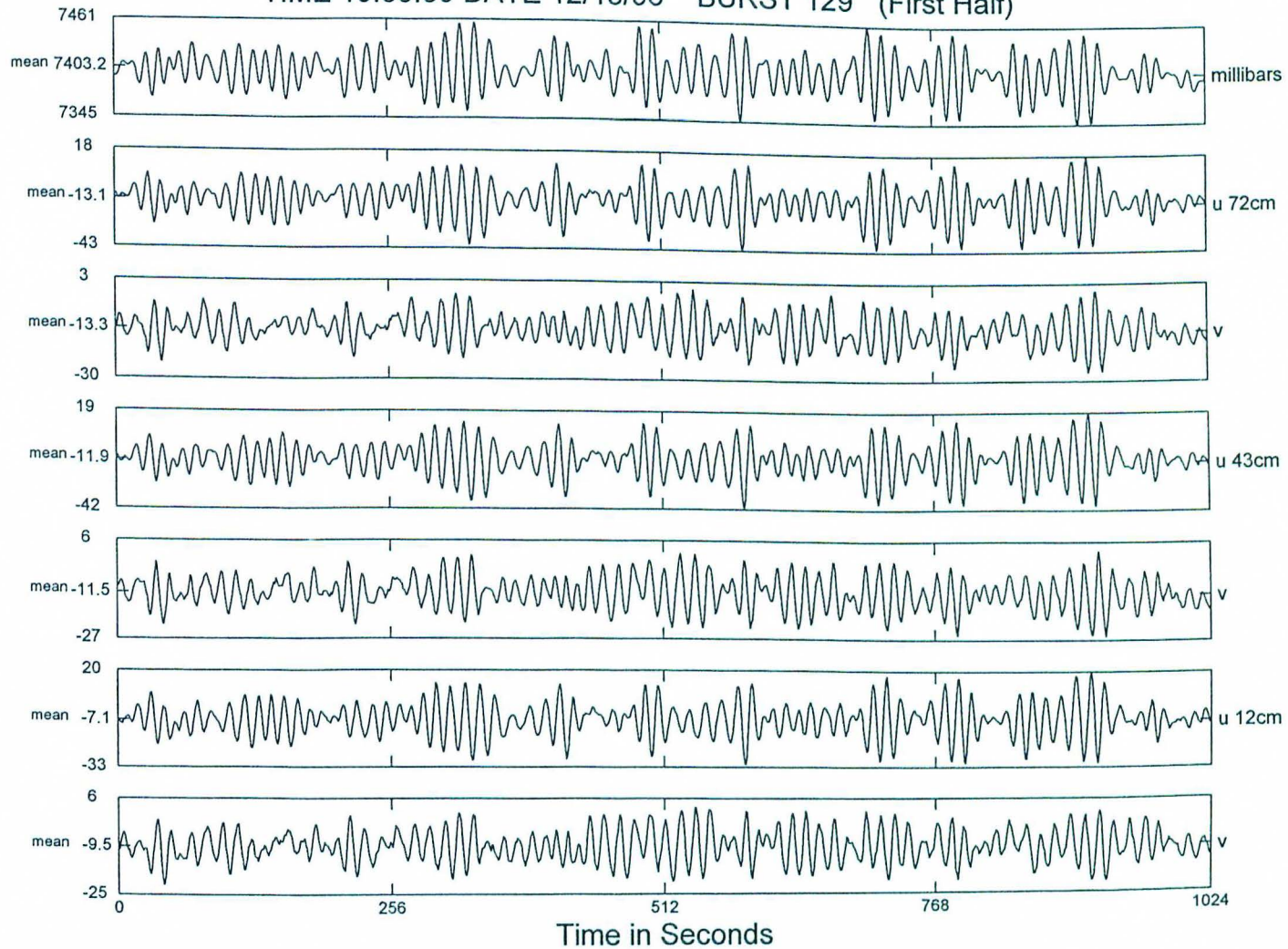
626 Burst Data from Strataform G-60 Deep Pod (u +East v +North in cm/s)
TIME 20:00:00 DATE 12/07/96 BURST 93 (First Half)



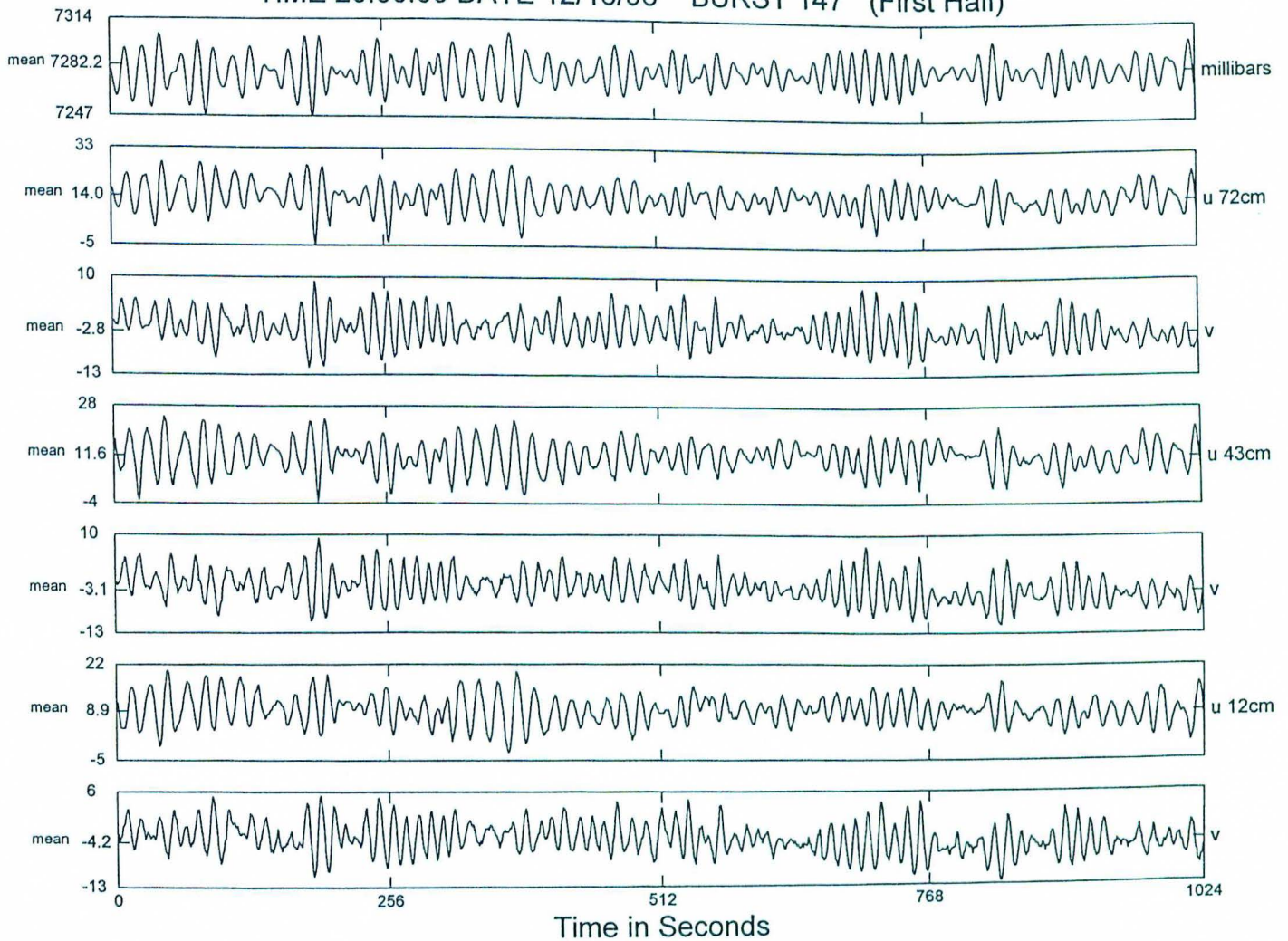
626 Burst Data from Strataform G-60 Deep Pod (u +East v +North in cm/s)
TIME 20:00:00 DATE 12/10/96 BURST 111 (First Half)



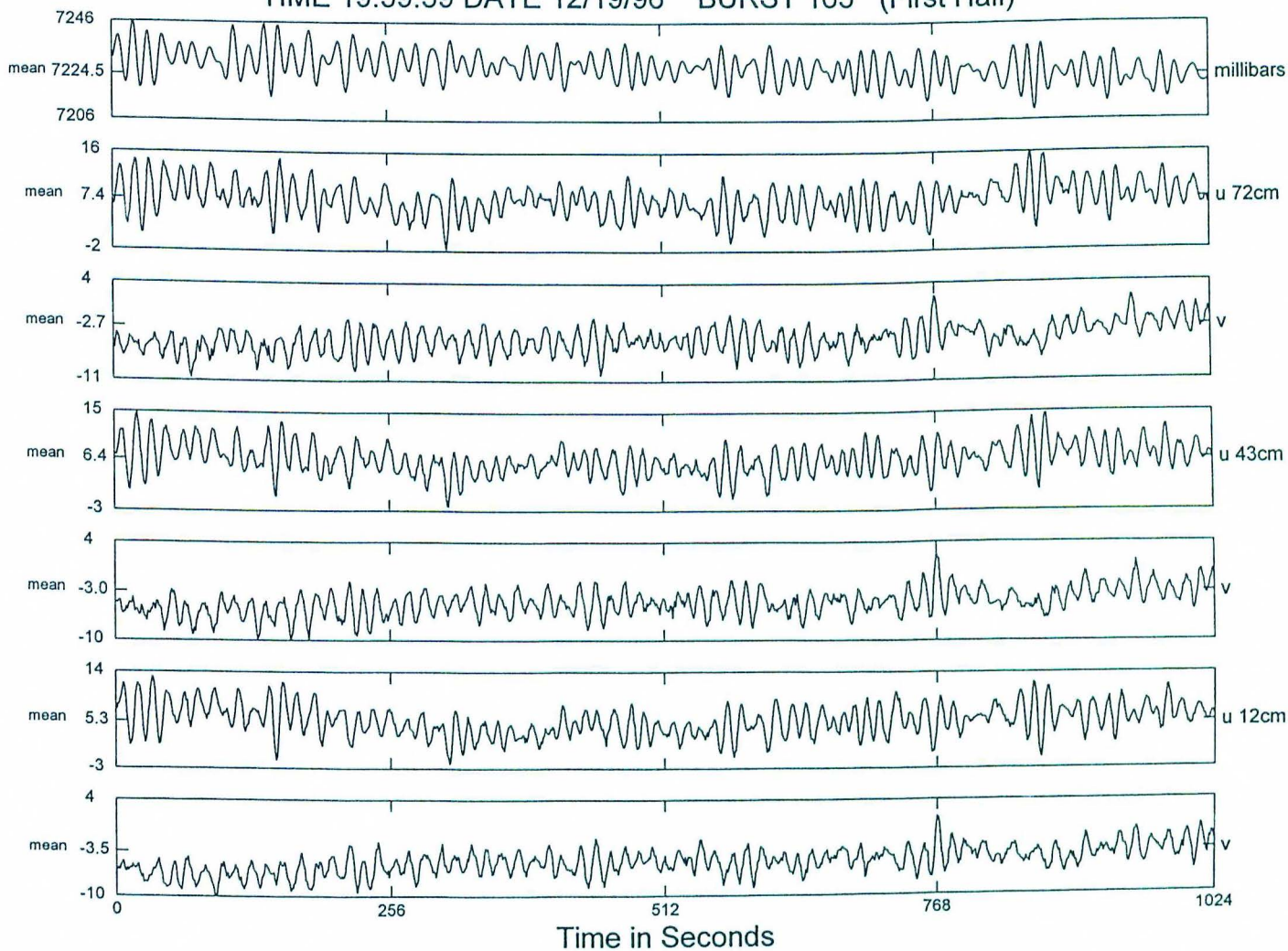
626 Burst Data from Strataform G-60 Deep Pod (u +East v +North in cm/s)
TIME 19:59:59 DATE 12/13/96 BURST 129 (First Half)



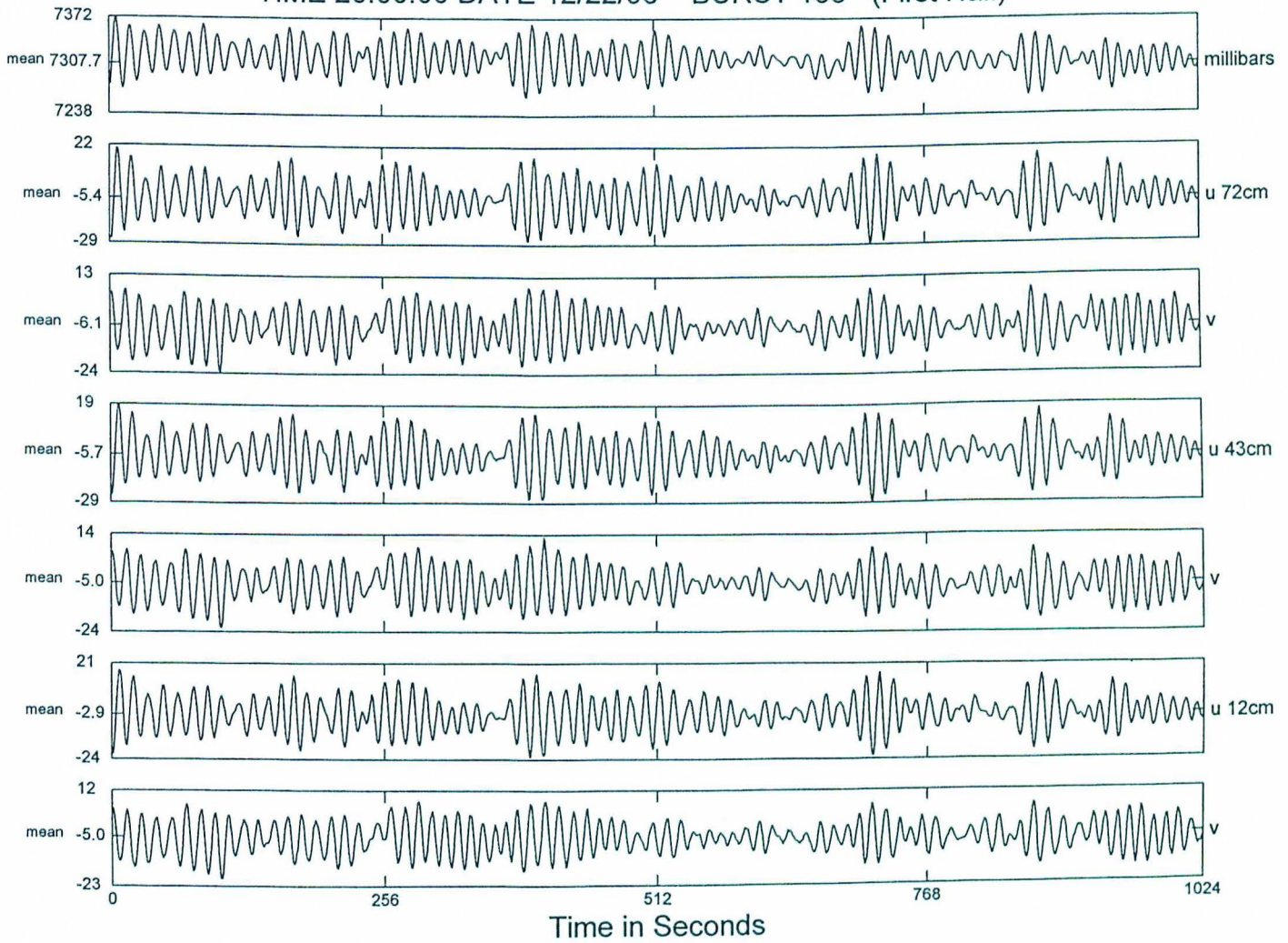
626 Burst Data from Strataform G-60 Deep Pod (u +East v +North in cm/s)
TIME 20:00:00 DATE 12/16/96 BURST 147 (First Half)



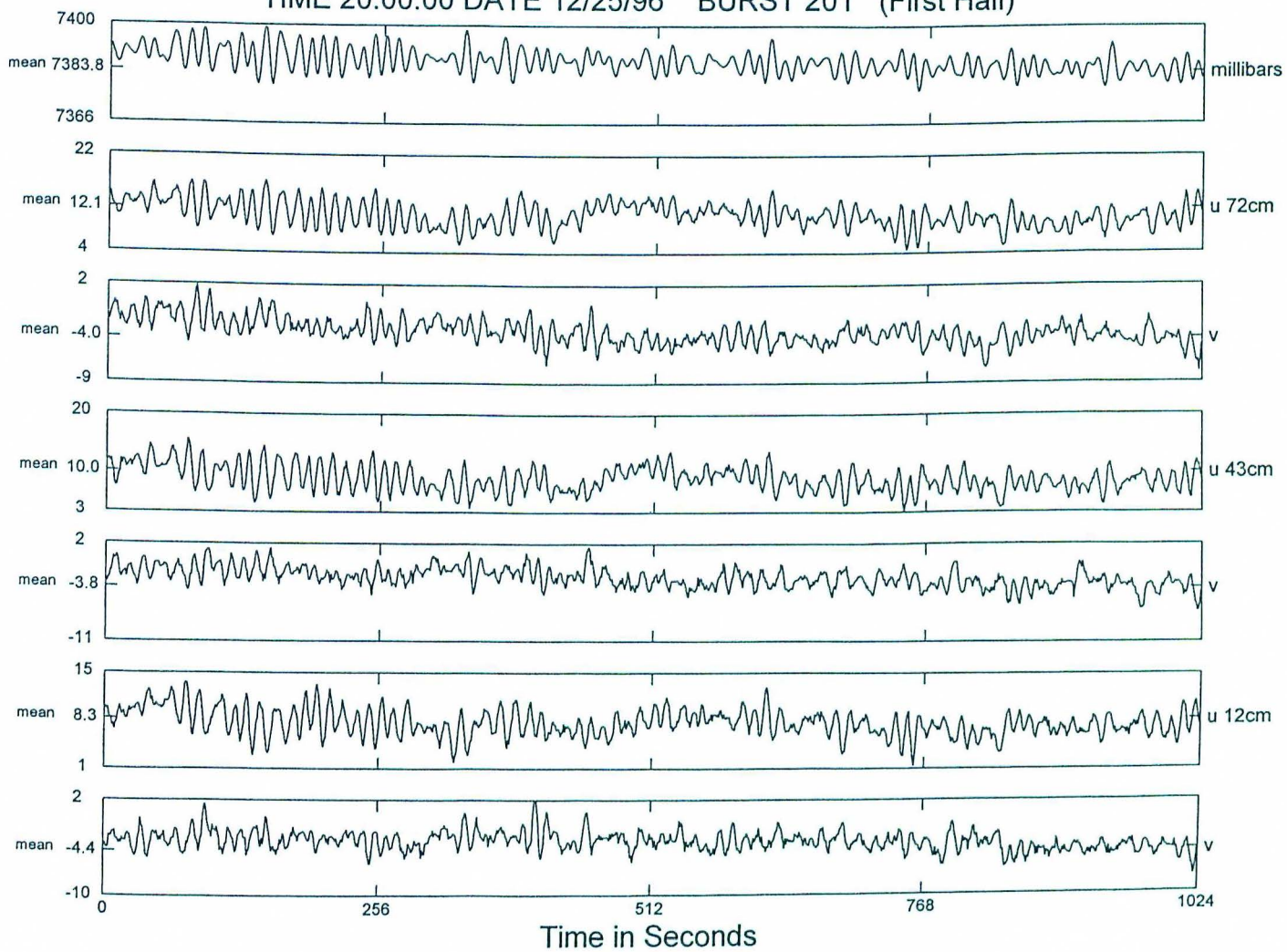
626 Burst Data from Strataform G-60 Deep Pod (u +East v +North in cm/s)
TIME 19:59:59 DATE 12/19/96 BURST 165 (First Half)



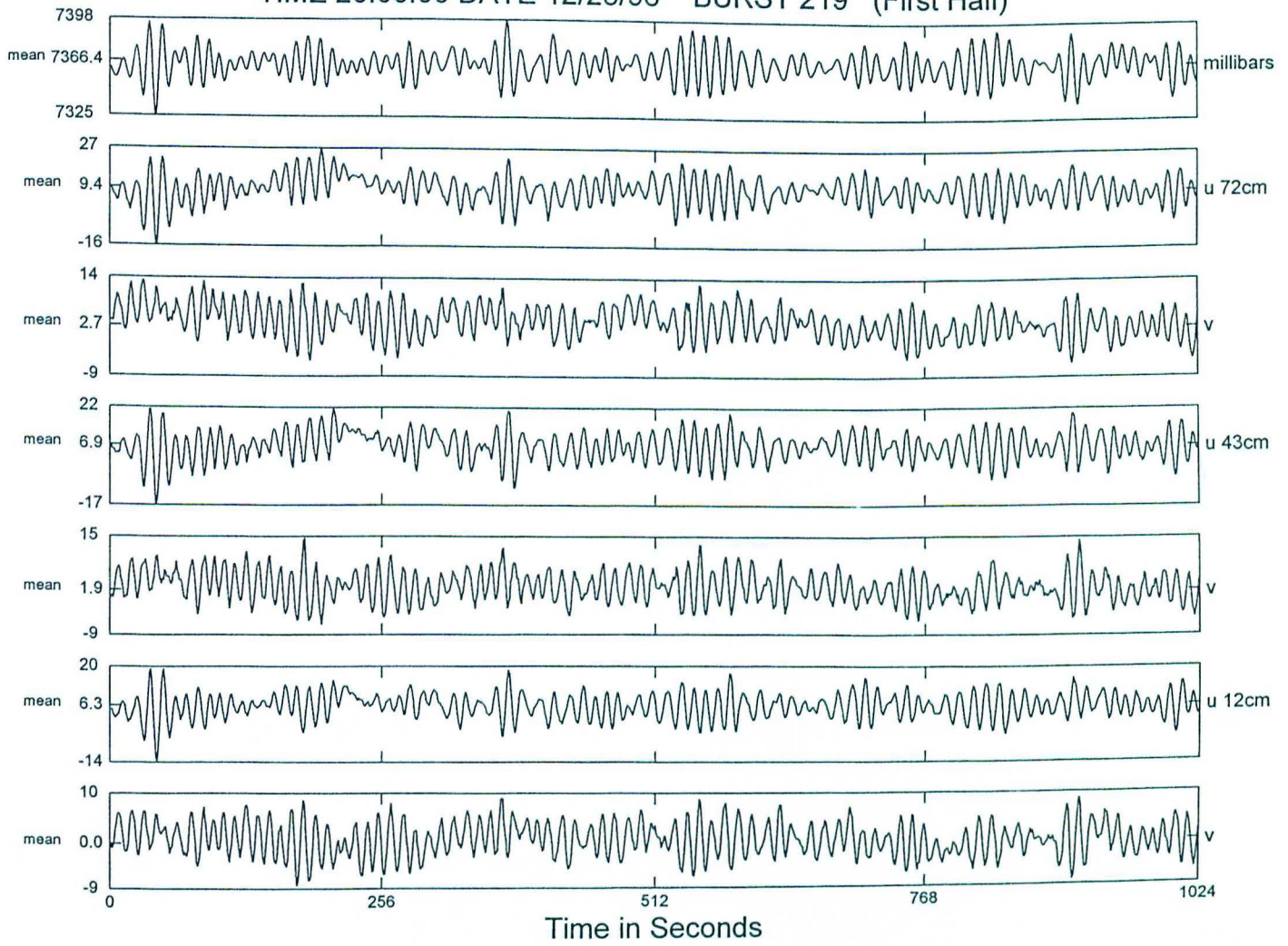
626 Burst Data from Strataform G-60 Deep Pod (u +East v +North in cm/s)
TIME 20:00:00 DATE 12/22/96 BURST 183 (First Half)



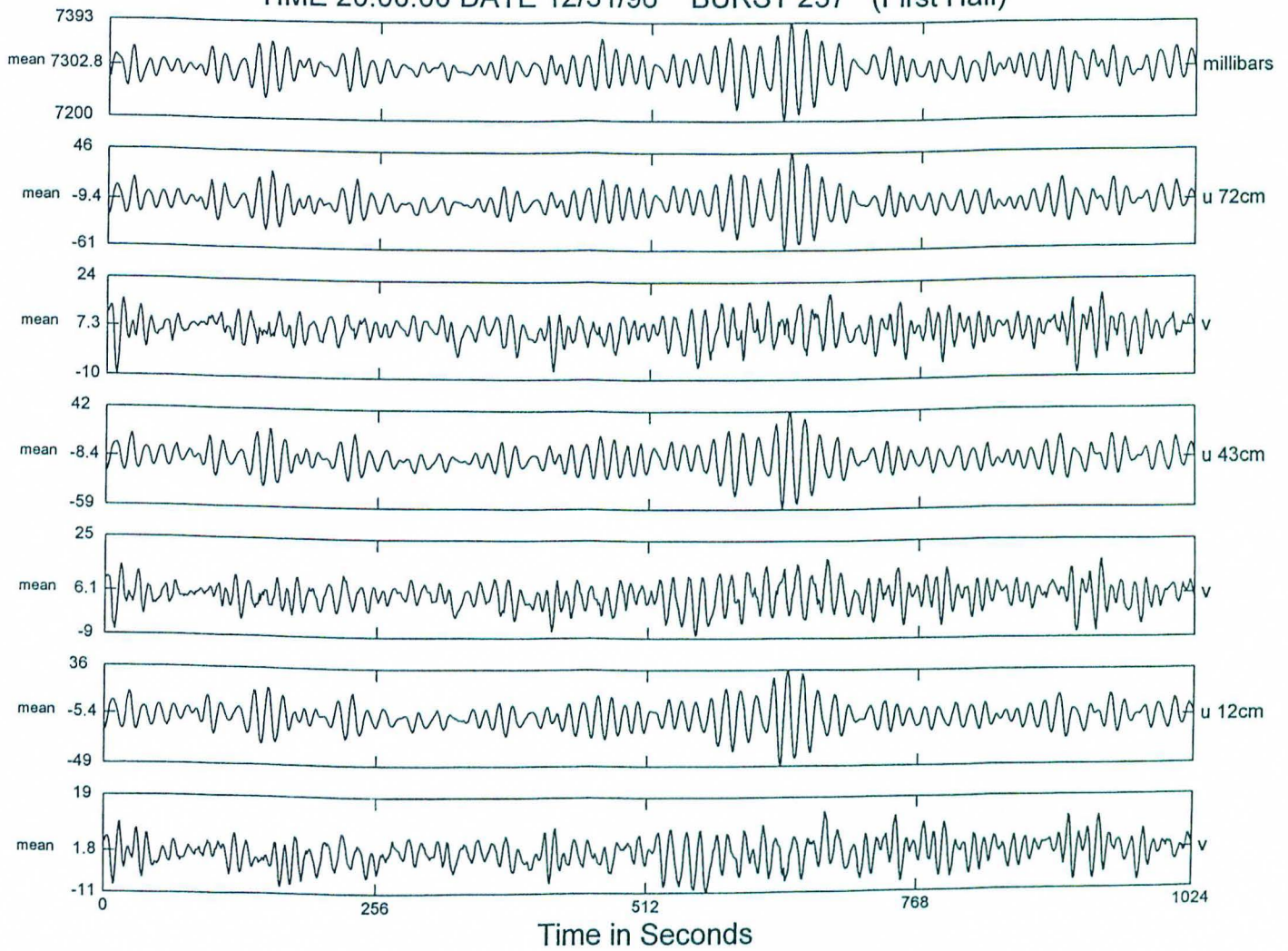
626 Burst Data from Strataform G-60 Deep Pod (u +East v +North in cm/s)
TIME 20:00:00 DATE 12/25/96 BURST 201 (First Half)



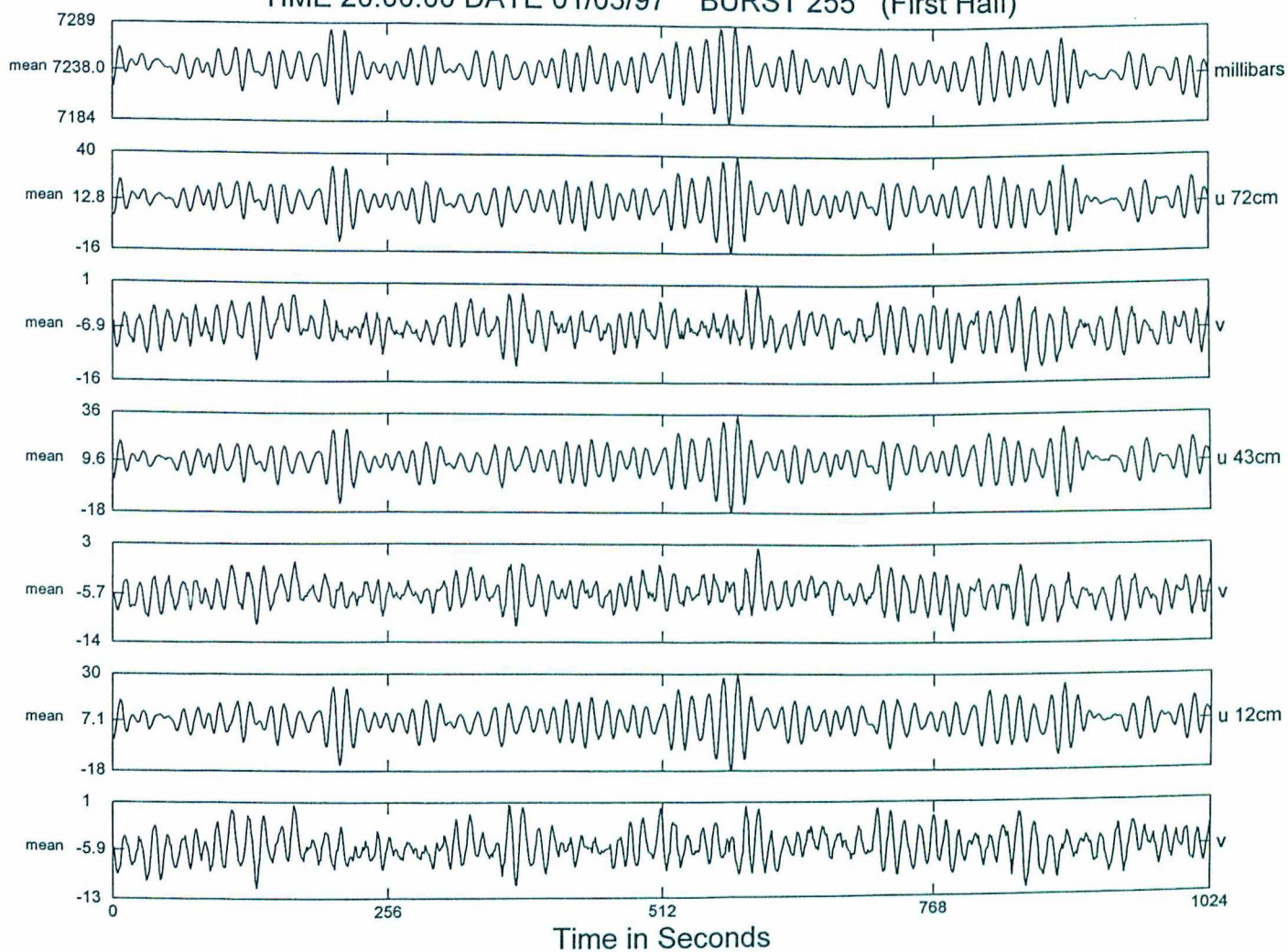
626 Burst Data from Strataform G-60 Deep Pod (u +East v +North in cm/s)
TIME 20:00:00 DATE 12/28/96 BURST 219 (First Half)



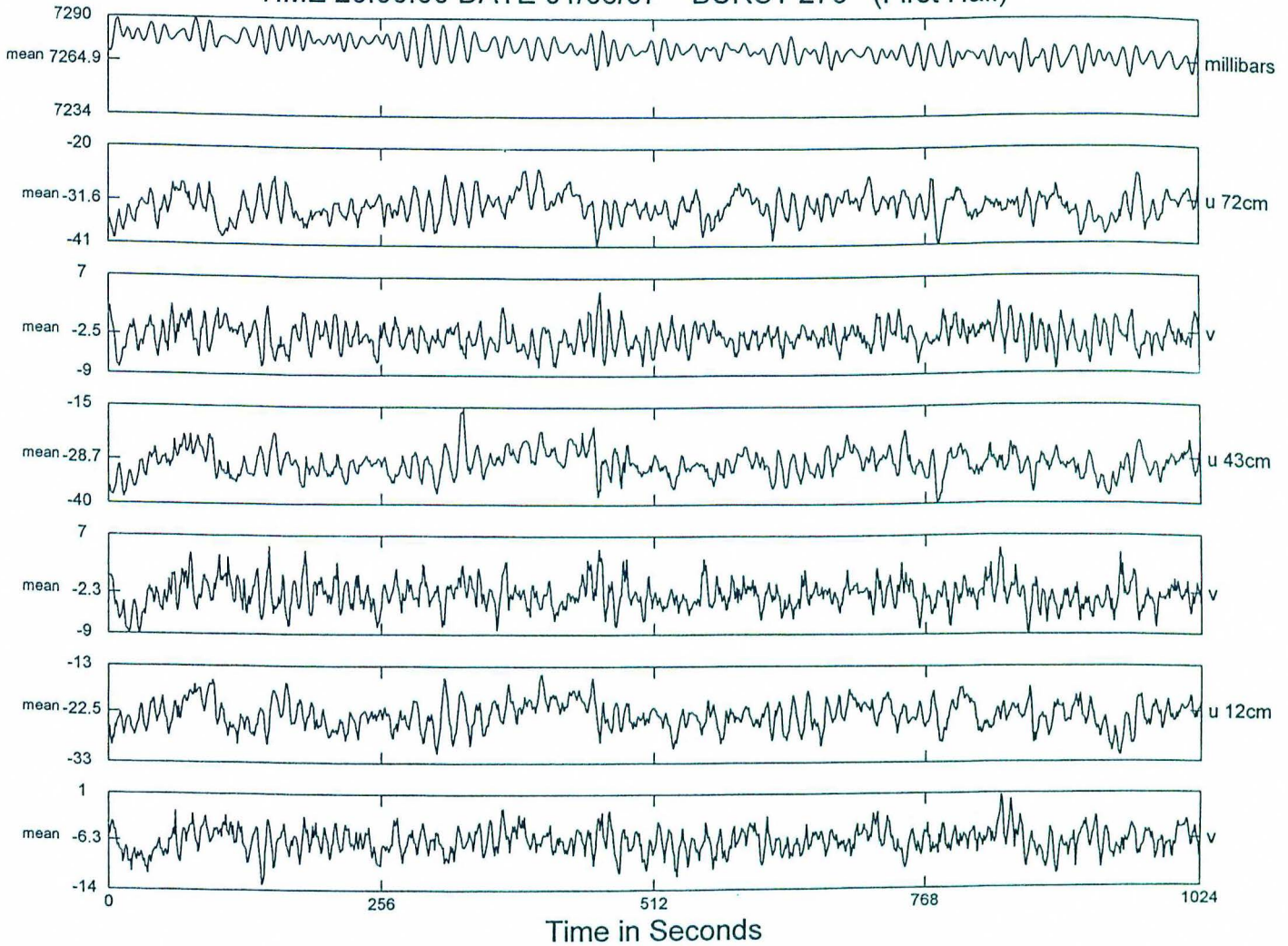
626 Burst Data from Strataform G-60 Deep Pod (u +East v +North in cm/s)
TIME 20:00:00 DATE 12/31/96 BURST 237 (First Half)



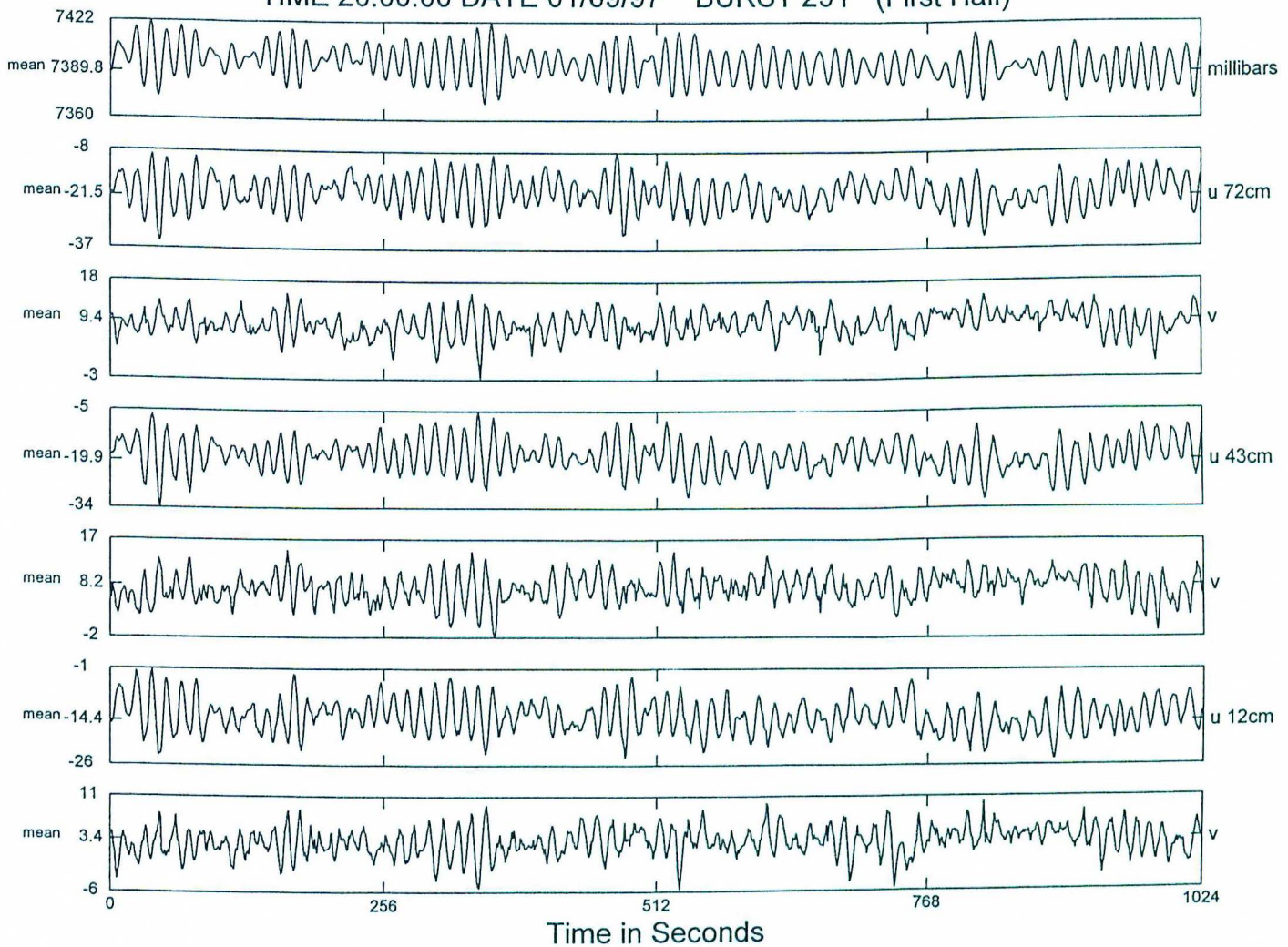
626 Burst Data from Strataform G-60 Deep Pod (u +East v +North in cm/s)
TIME 20:00:00 DATE 01/03/97 BURST 255 (First Half)



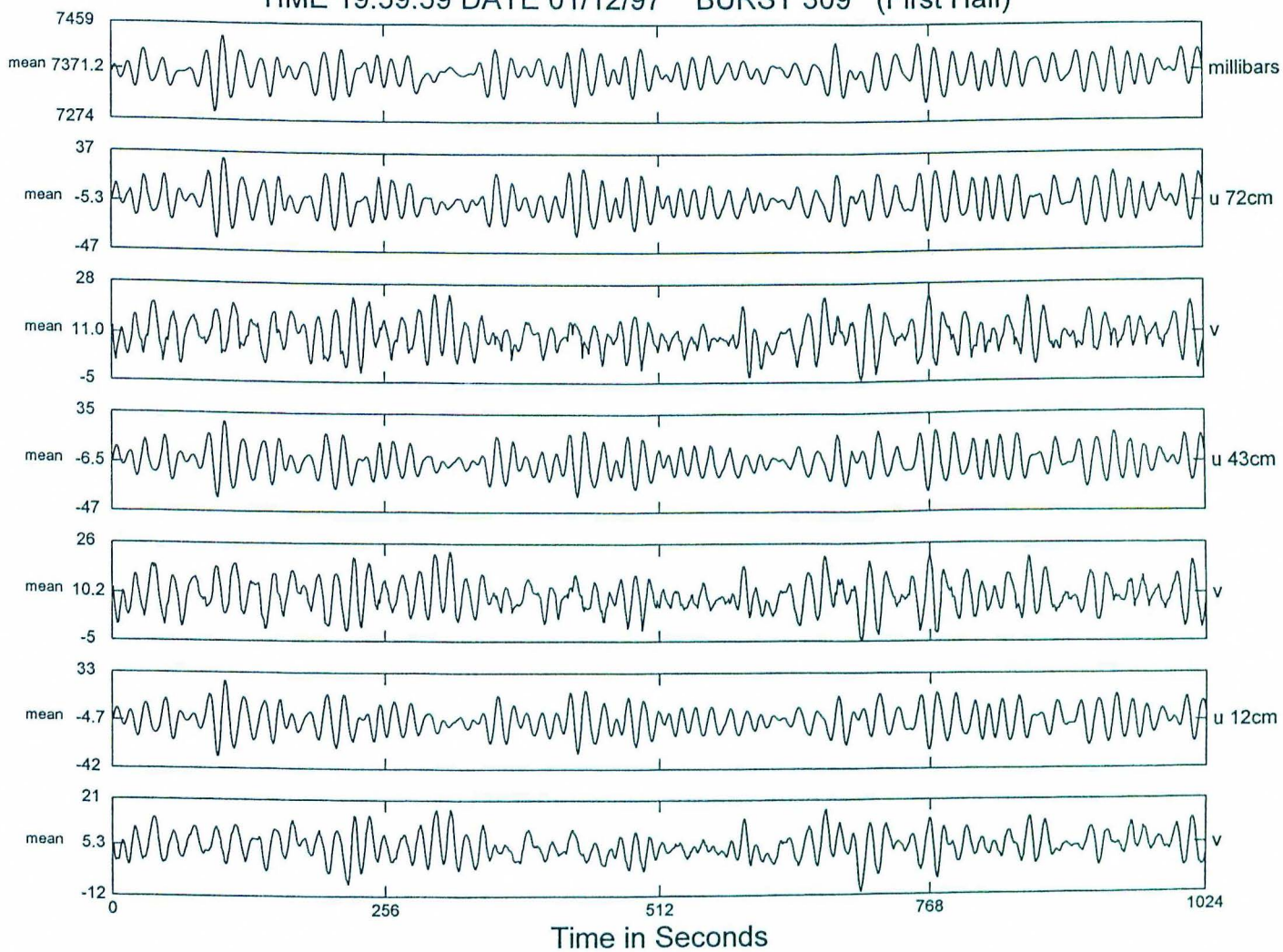
626 Burst Data from Strataform G-60 Deep Pod (u +East v +North in cm/s)
TIME 20:00:00 DATE 01/06/97 BURST 273 (First Half)



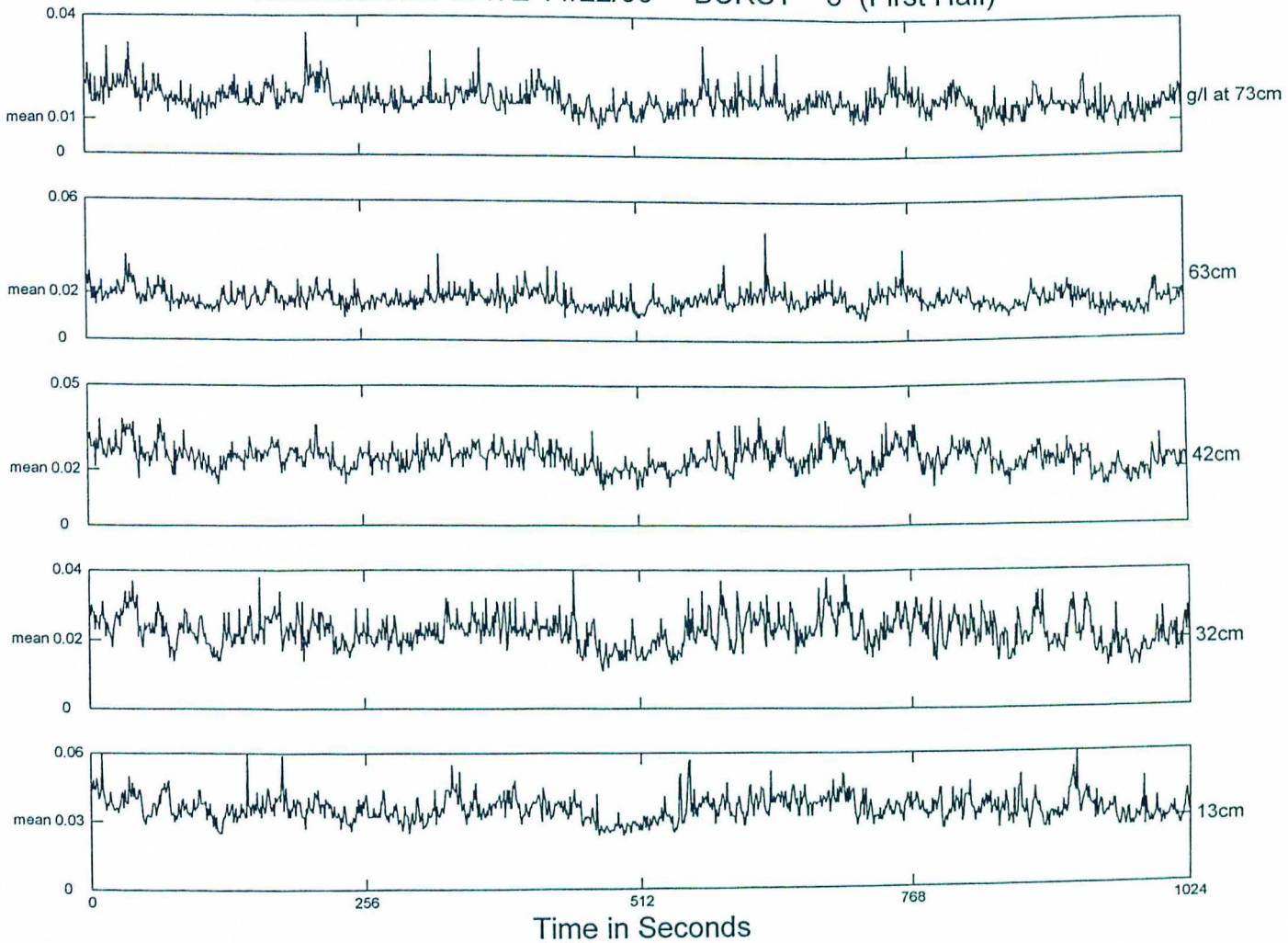
626 Burst Data from Strataform G-60 Deep Pod (u +East v +North in cm/s)
TIME 20:00:00 DATE 01/09/97 BURST 291 (First Half)



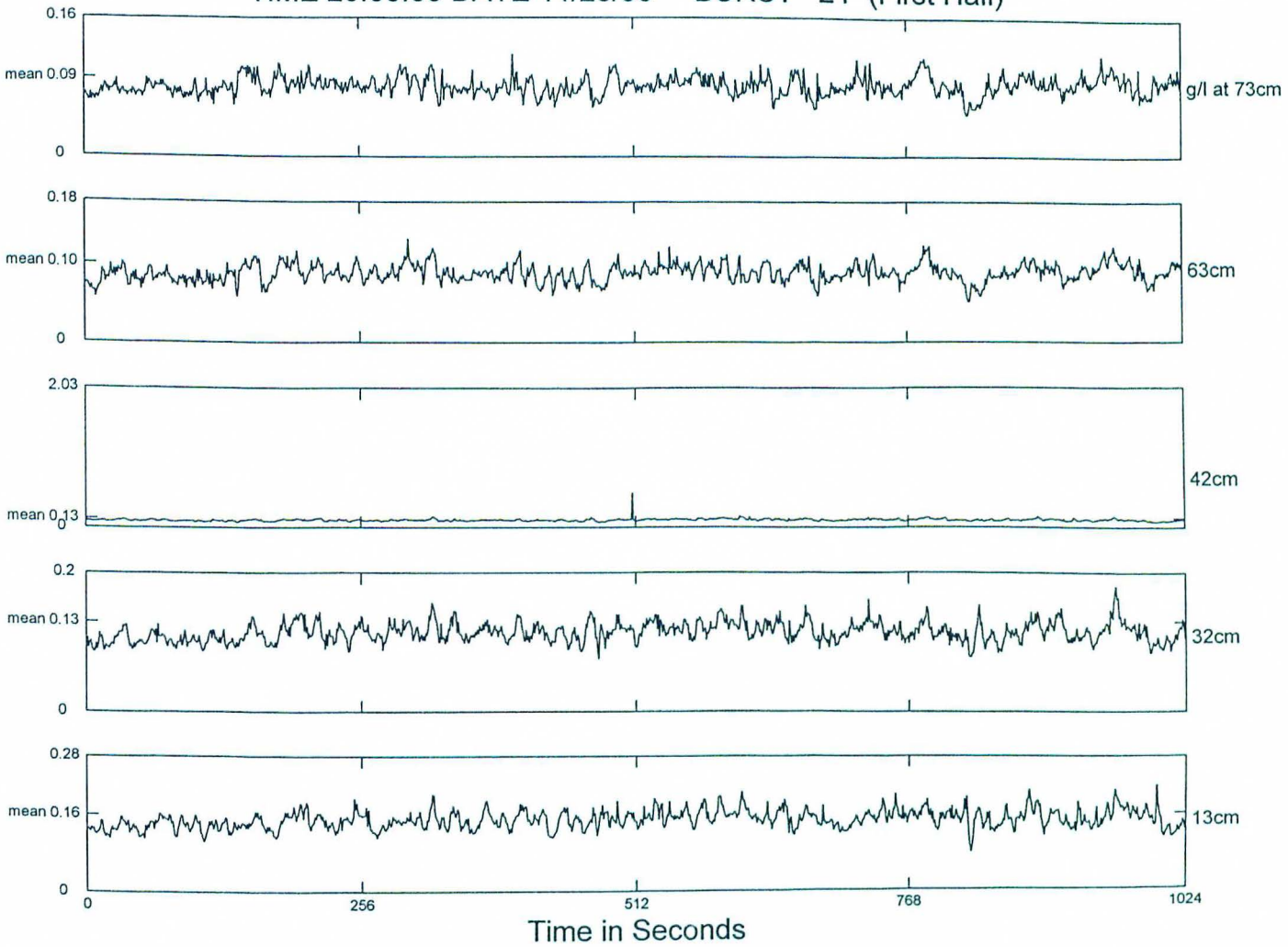
626 Burst Data from Strataform G-60 Deep Pod (u +East v +North in cm/s)
TIME 19:59:59 DATE 01/12/97 BURST 309 (First Half)



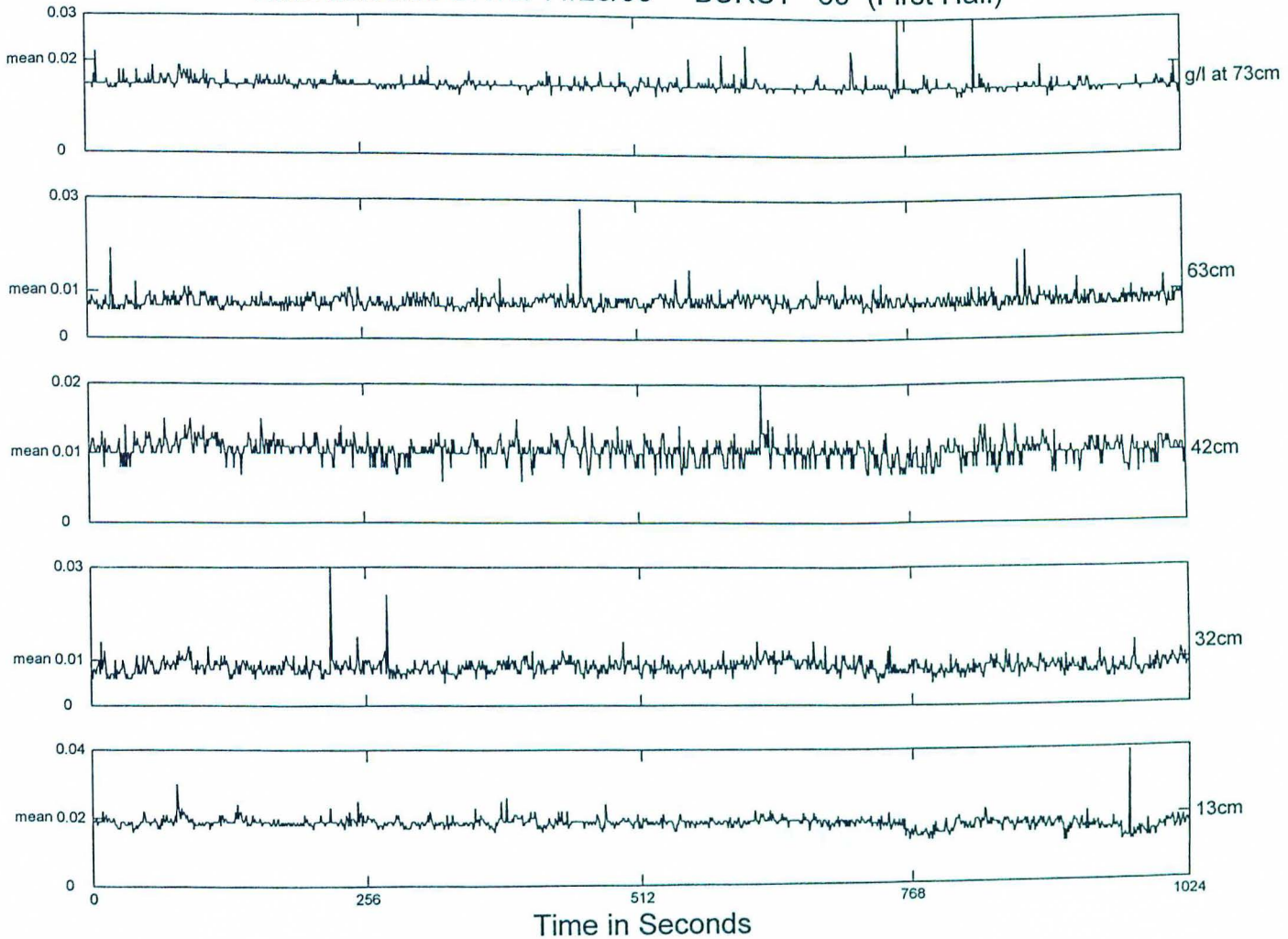
OBS Burst Data from Strataform G-60 Deep Pod
TIME 20:00:00 DATE 11/22/96 BURST 3 (First Half)



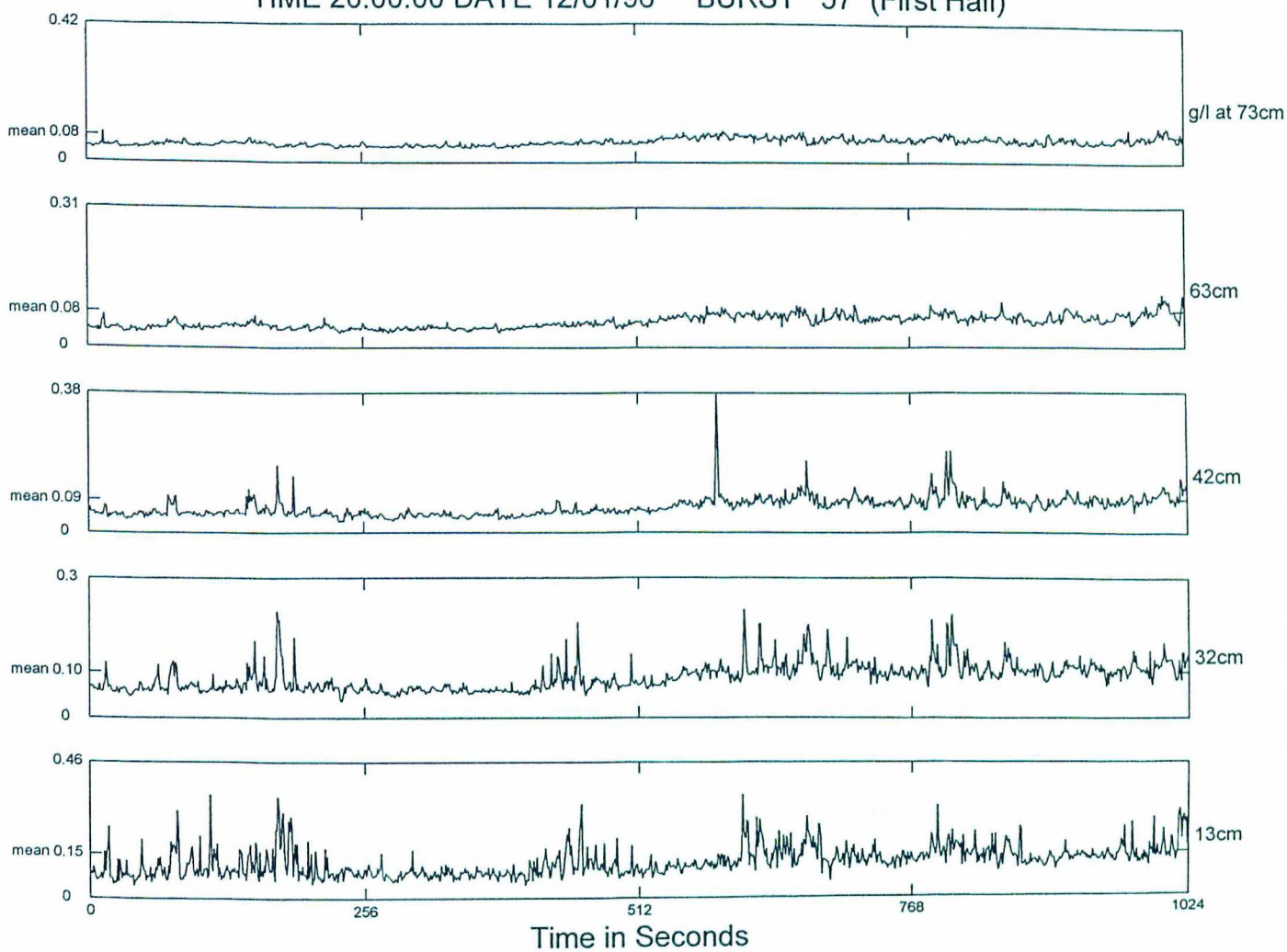
OBS Burst Data from Strataform G-60 Deep Pod
TIME 20:00:00 DATE 11/25/96 BURST 21 (First Half)



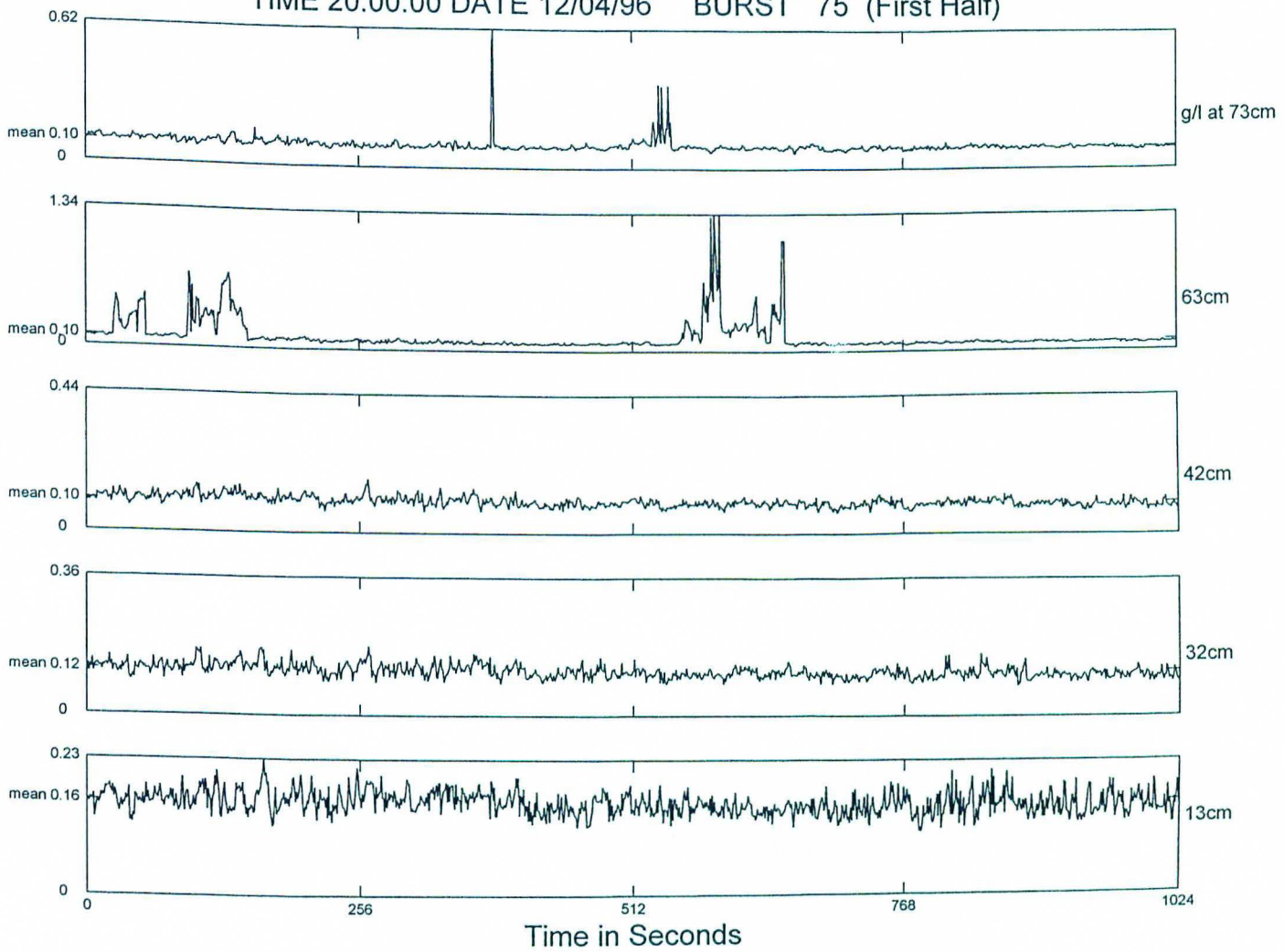
OBS Burst Data from Strataform G-60 Deep Pod
TIME 20:00:00 DATE 11/28/96 BURST 39 (First Half)



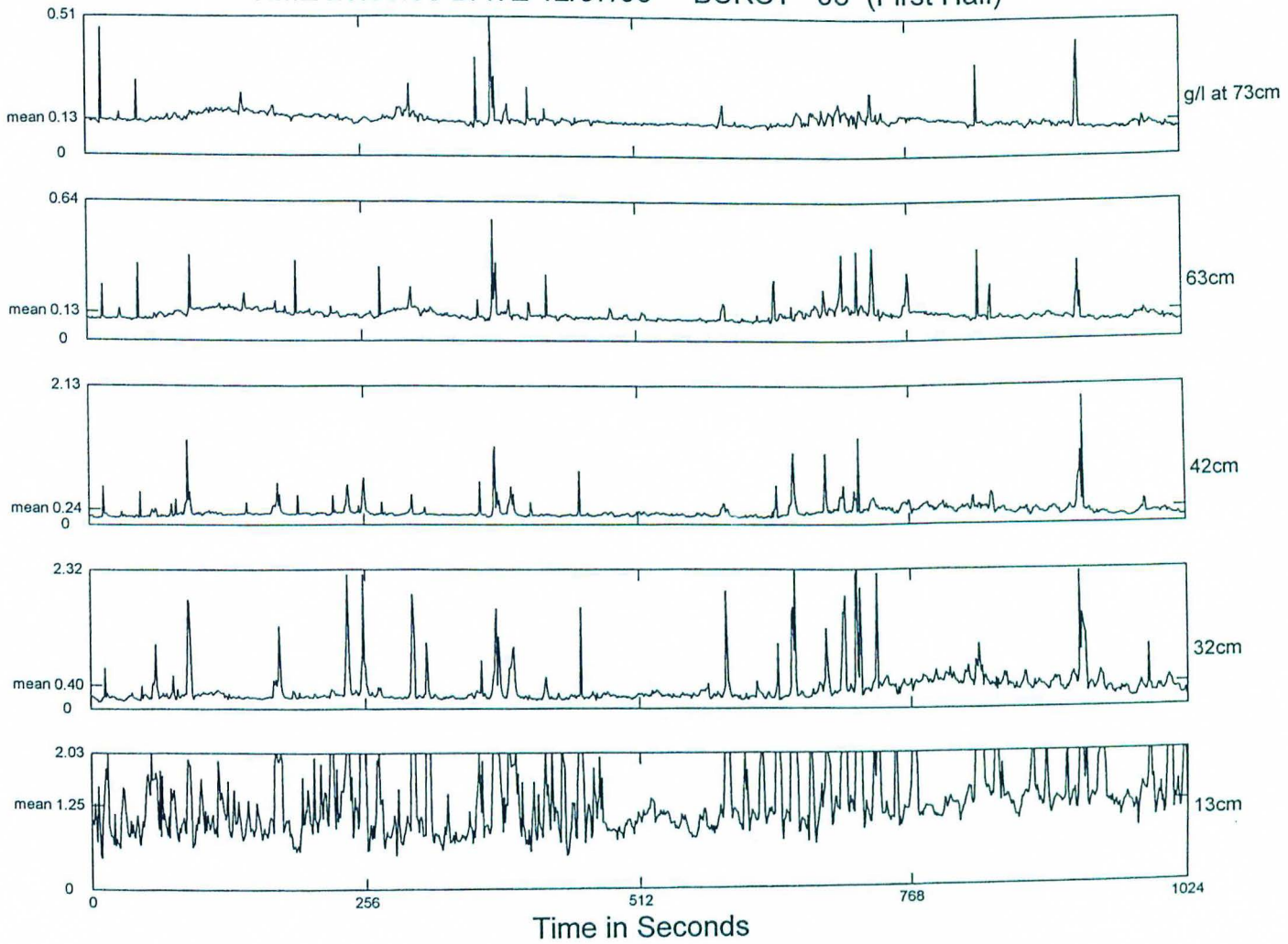
OBS Burst Data from Strataform G-60 Deep Pod
TIME 20:00:00 DATE 12/01/96 BURST 57 (First Half)



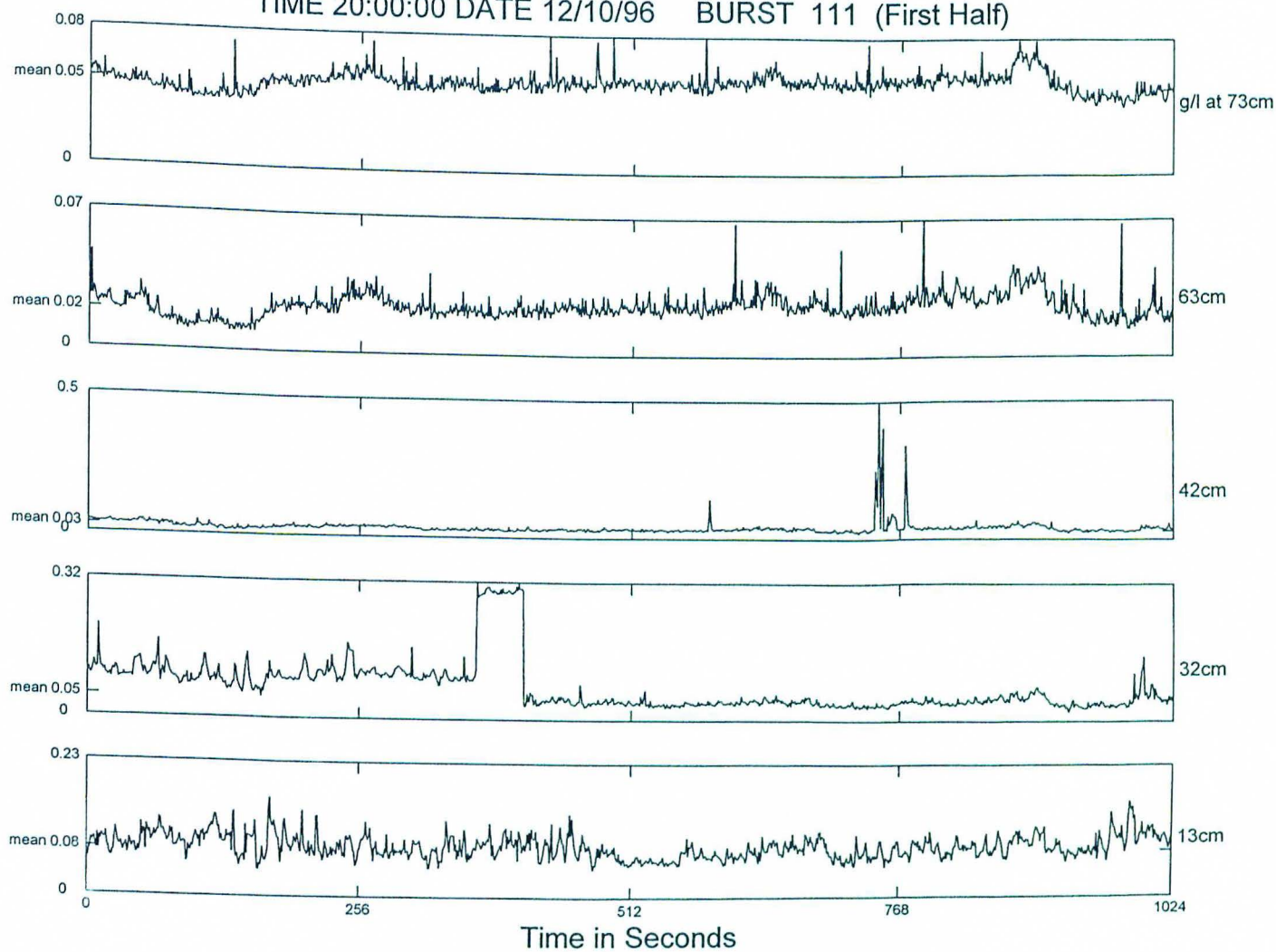
OBS Burst Data from Strataform G-60 Deep Pod
TIME 20:00:00 DATE 12/04/96 BURST 75 (First Half)



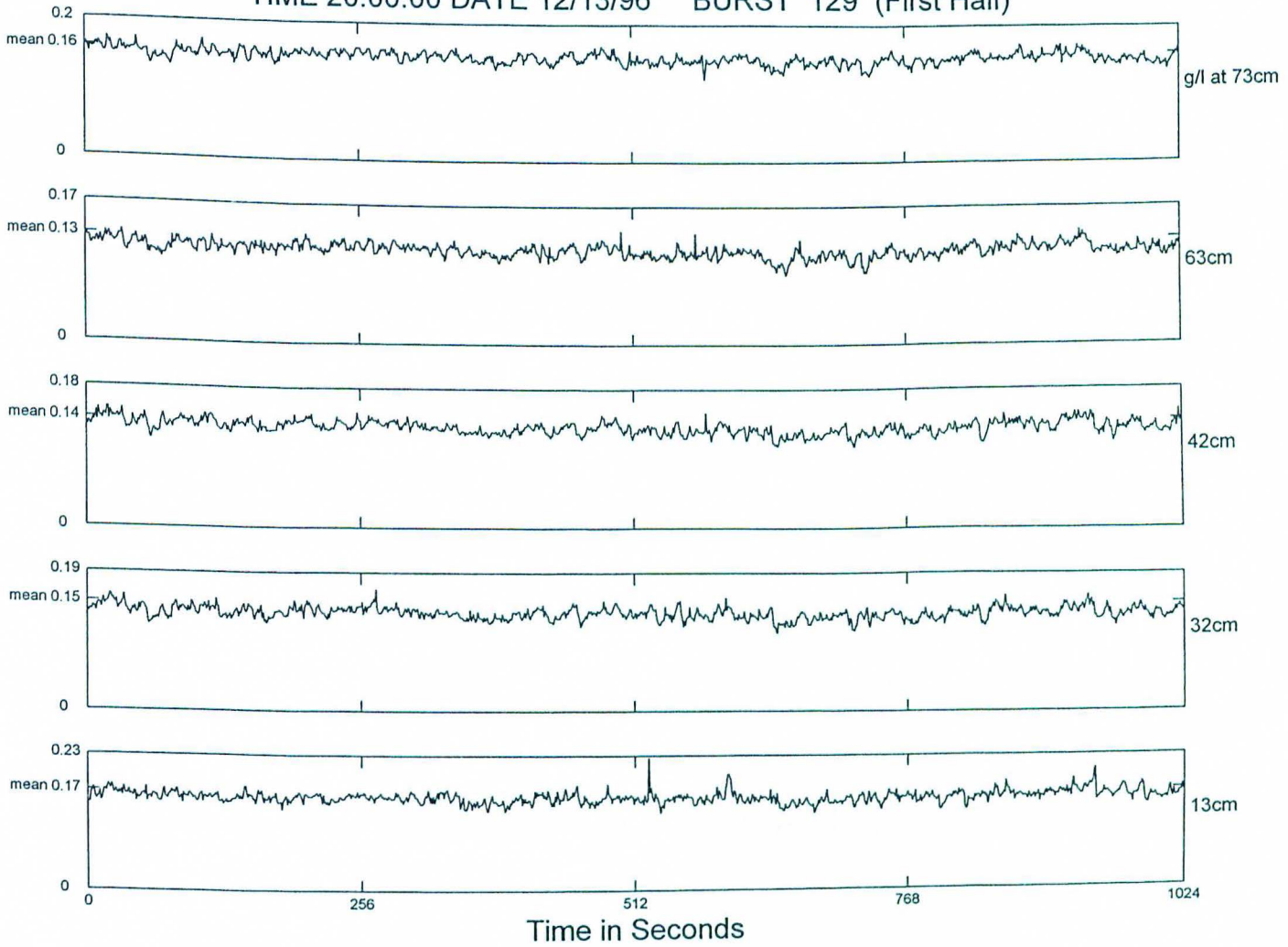
OBS Burst Data from Strataform G-60 Deep Pod
TIME 20:00:00 DATE 12/07/96 BURST 93 (First Half)



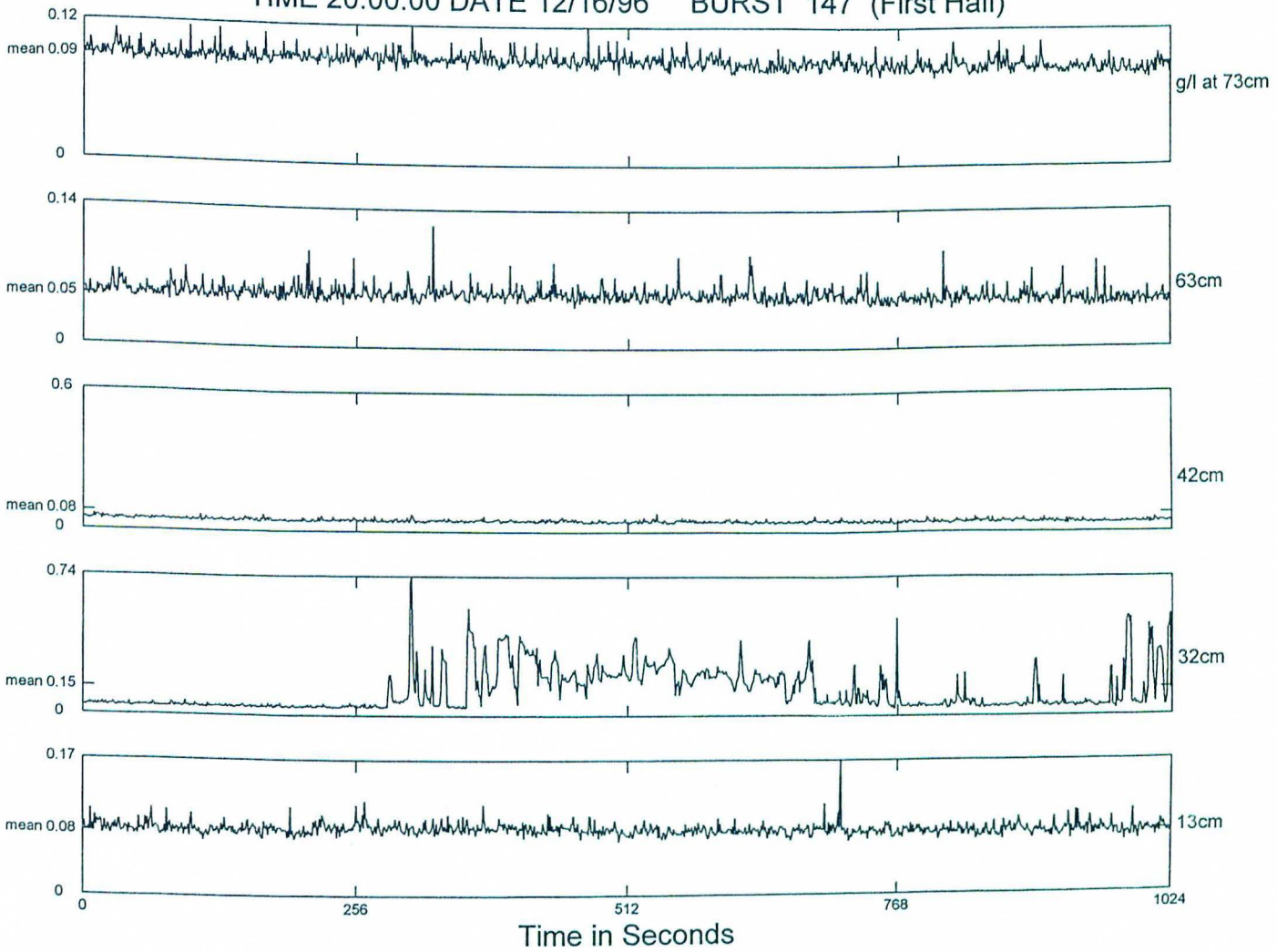
OBS Burst Data from Strataform G-60 Deep Pod
TIME 20:00:00 DATE 12/10/96 BURST 111 (First Half)



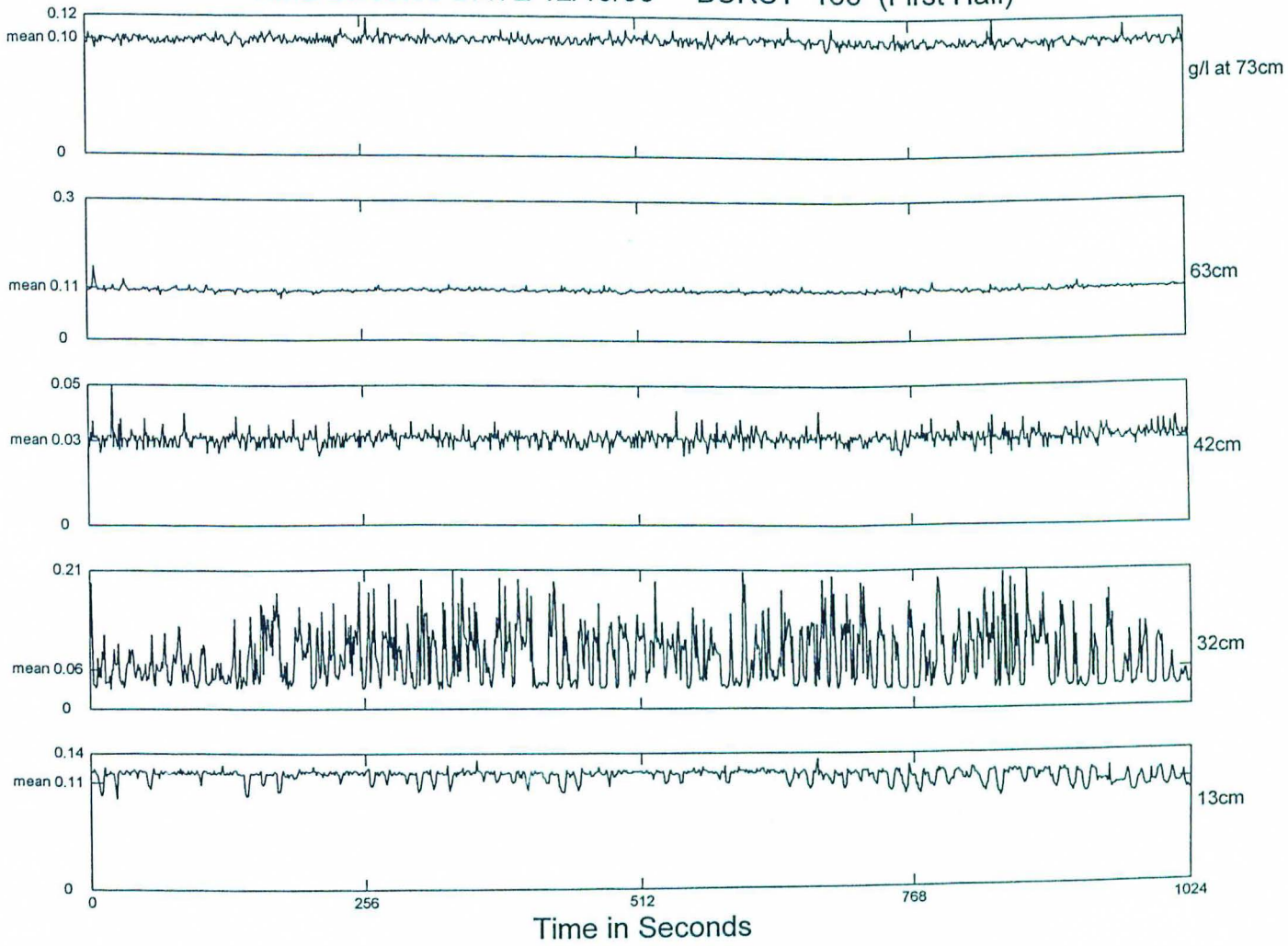
OBS Burst Data from Strataform G-60 Deep Pod
TIME 20:00:00 DATE 12/13/96 BURST 129 (First Half)



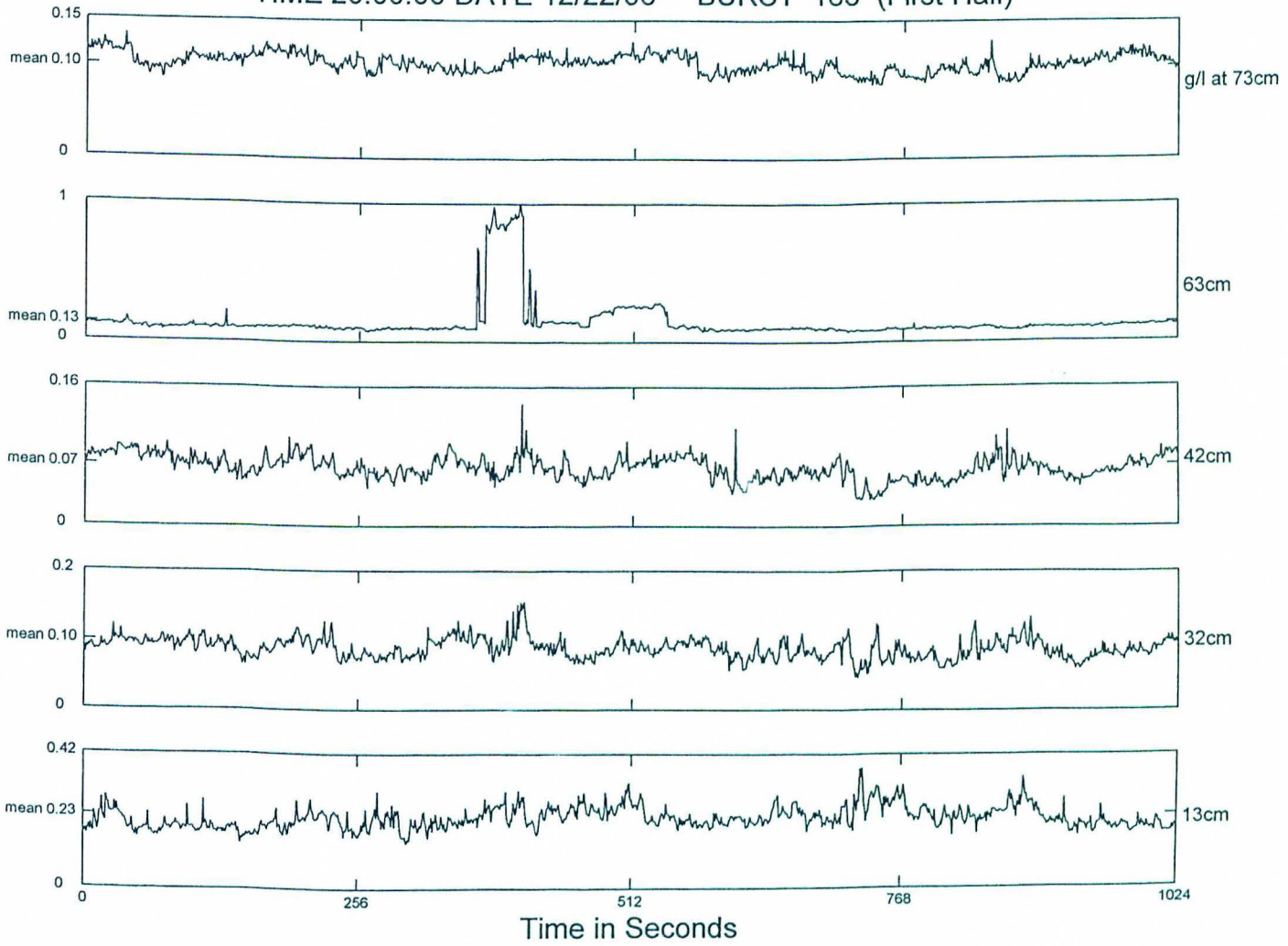
OBS Burst Data from Strataform G-60 Deep Pod
TIME 20:00:00 DATE 12/16/96 BURST 147 (First Half)



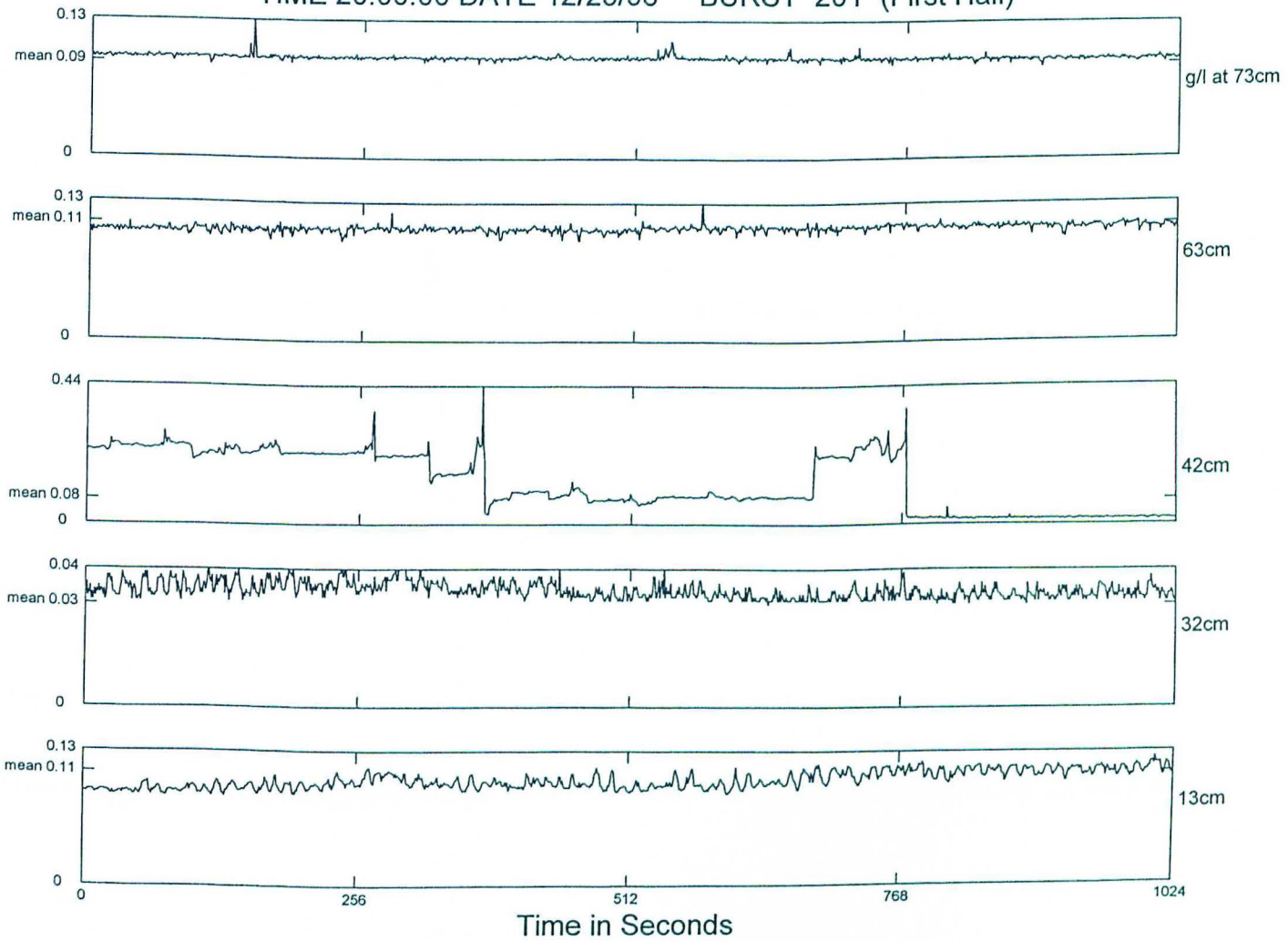
OBS Burst Data from Strataform G-60 Deep Pod
TIME 20:00:00 DATE 12/19/96 BURST 165 (First Half)



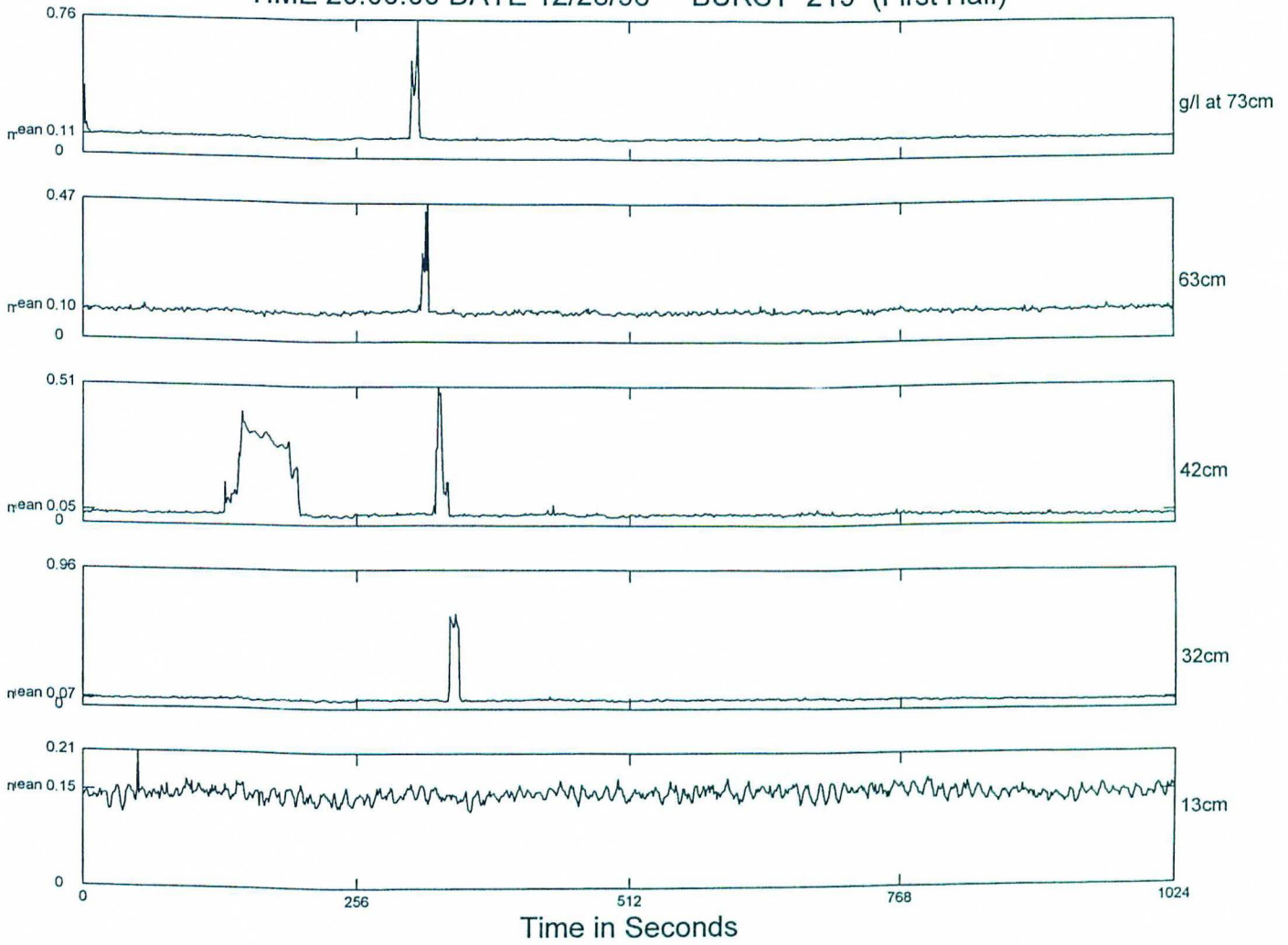
OBS Burst Data from Strataform G-60 Deep Pod
TIME 20:00:00 DATE 12/22/96 BURST 183 (First Half)



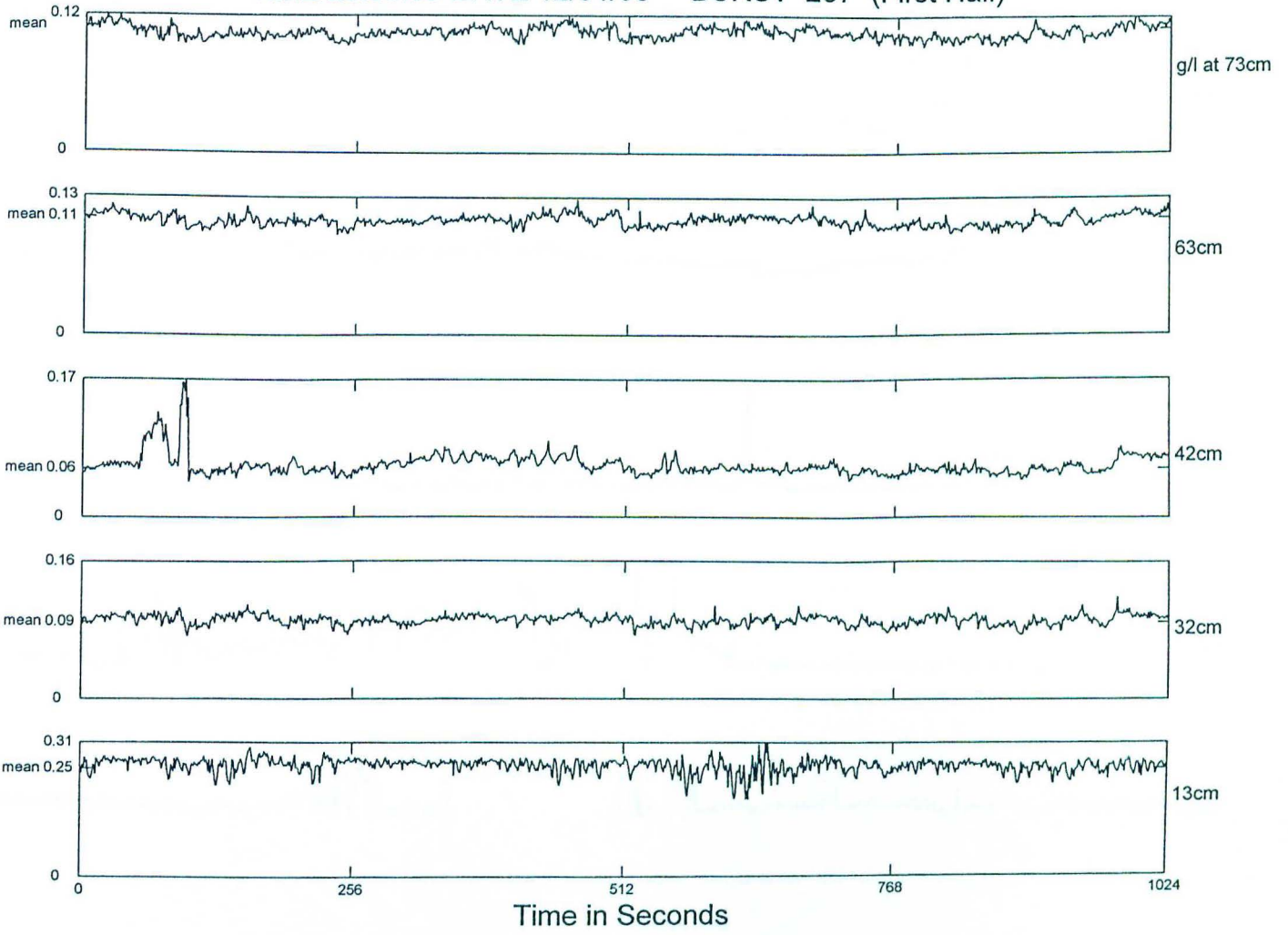
OBS Burst Data from Strataform G-60 Deep Pod
TIME 20:00:00 DATE 12/25/96 BURST 201 (First Half)



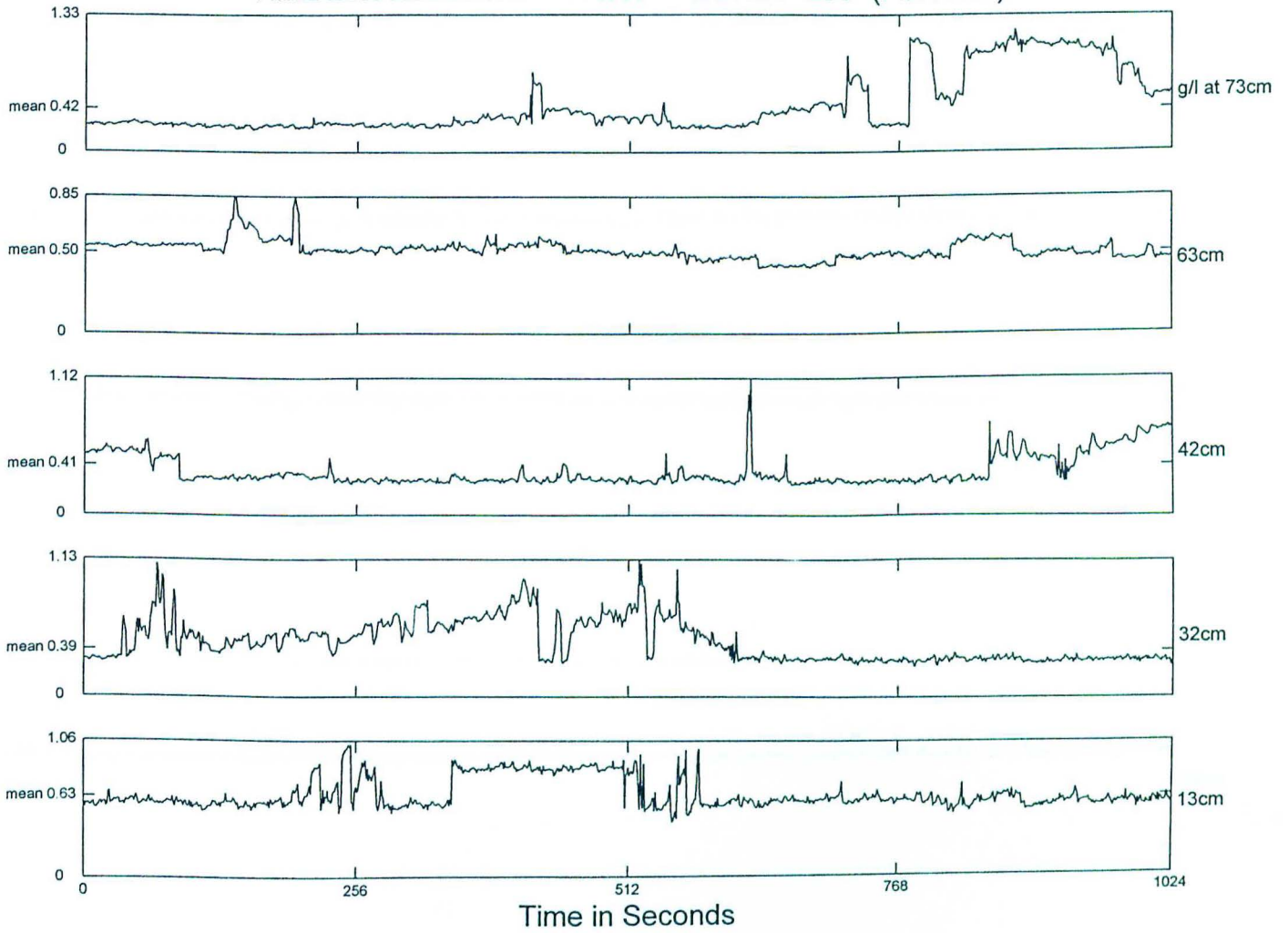
OBS Burst Data from Strataform G-60 Deep Pod
TIME 20:00:00 DATE 12/28/96 BURST 219 (First Half)



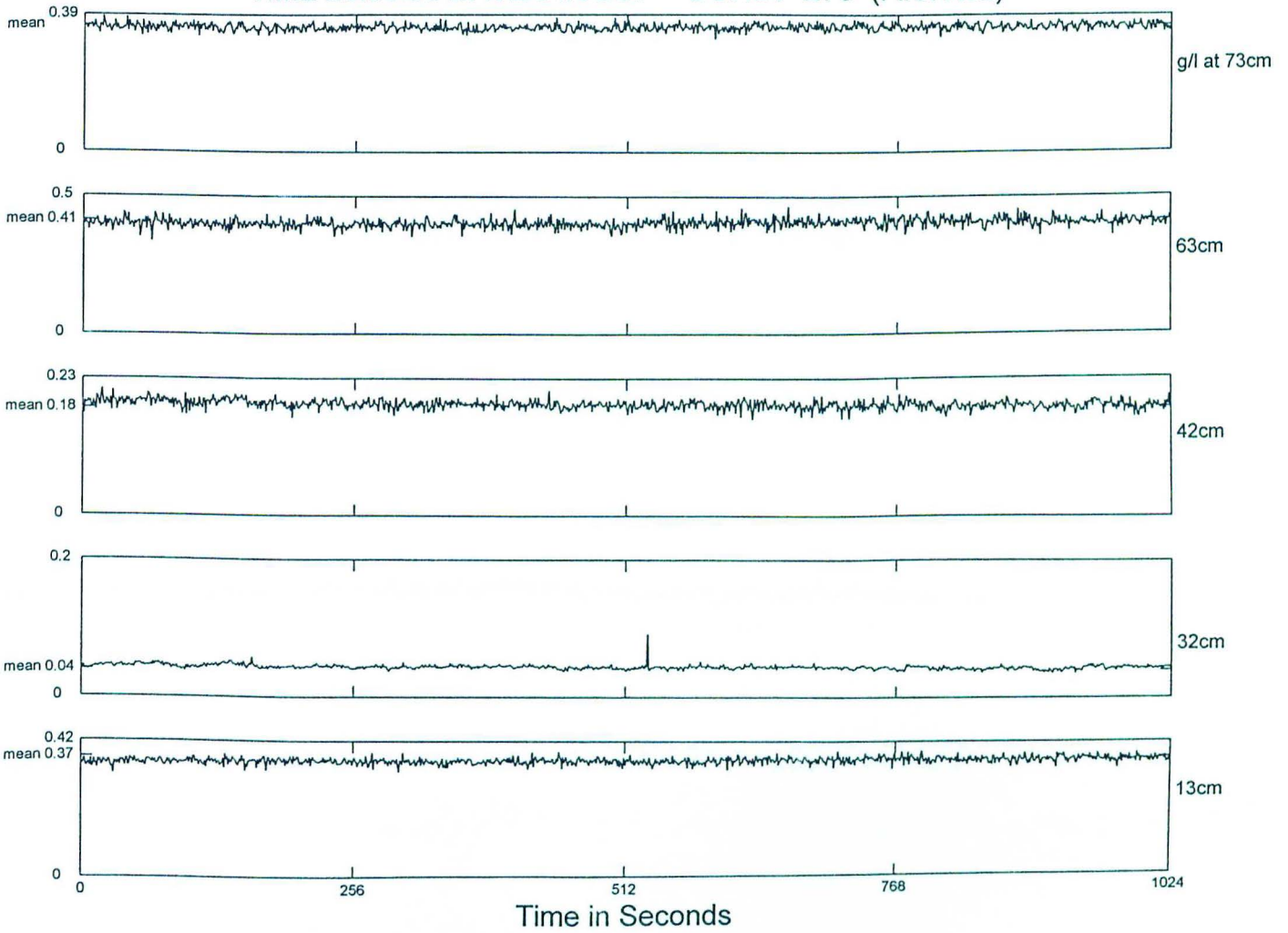
OBS Burst Data from Strataform G-60 Deep Pod
TIME 20:00:00 DATE 12/31/96 BURST 237 (First Half)



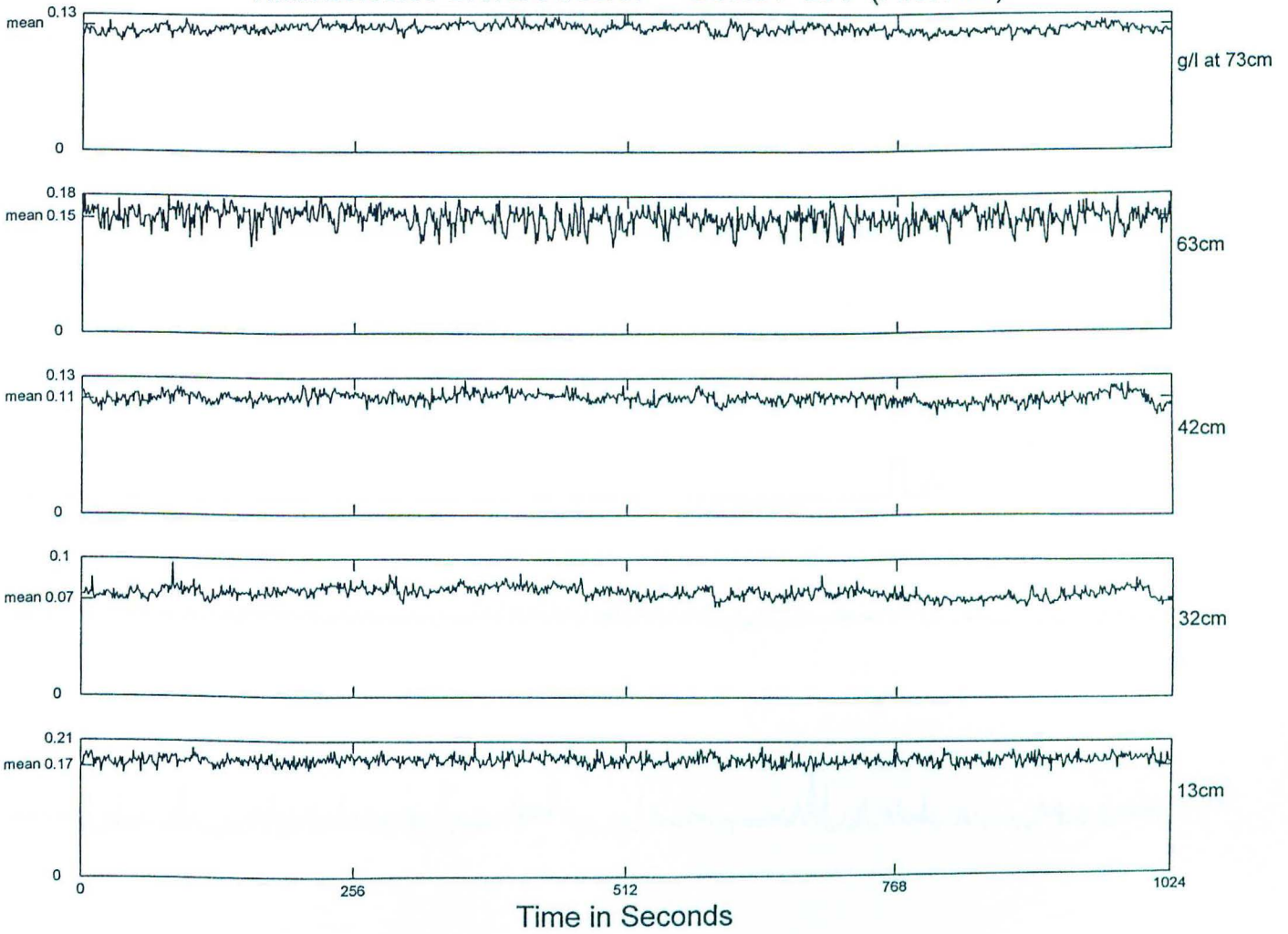
OBS Burst Data from Strataform G-60 Deep Pod
TIME 20:00:00 DATE 01/03/97 BURST 255 (First Half)



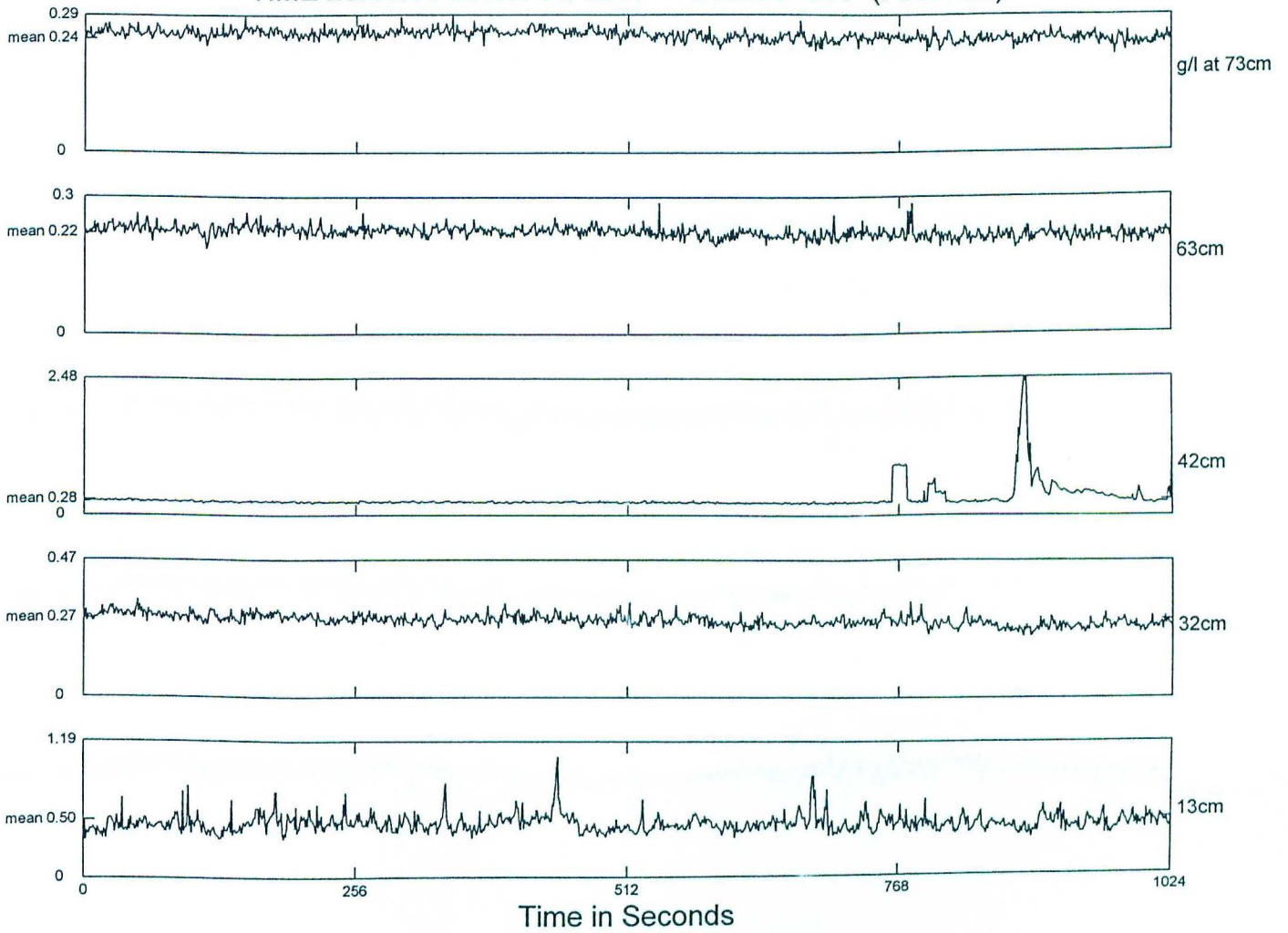
OBS Burst Data from Strataform G-60 Deep Pod
TIME 20:00:00 DATE 01/06/97 BURST 273 (First Half)



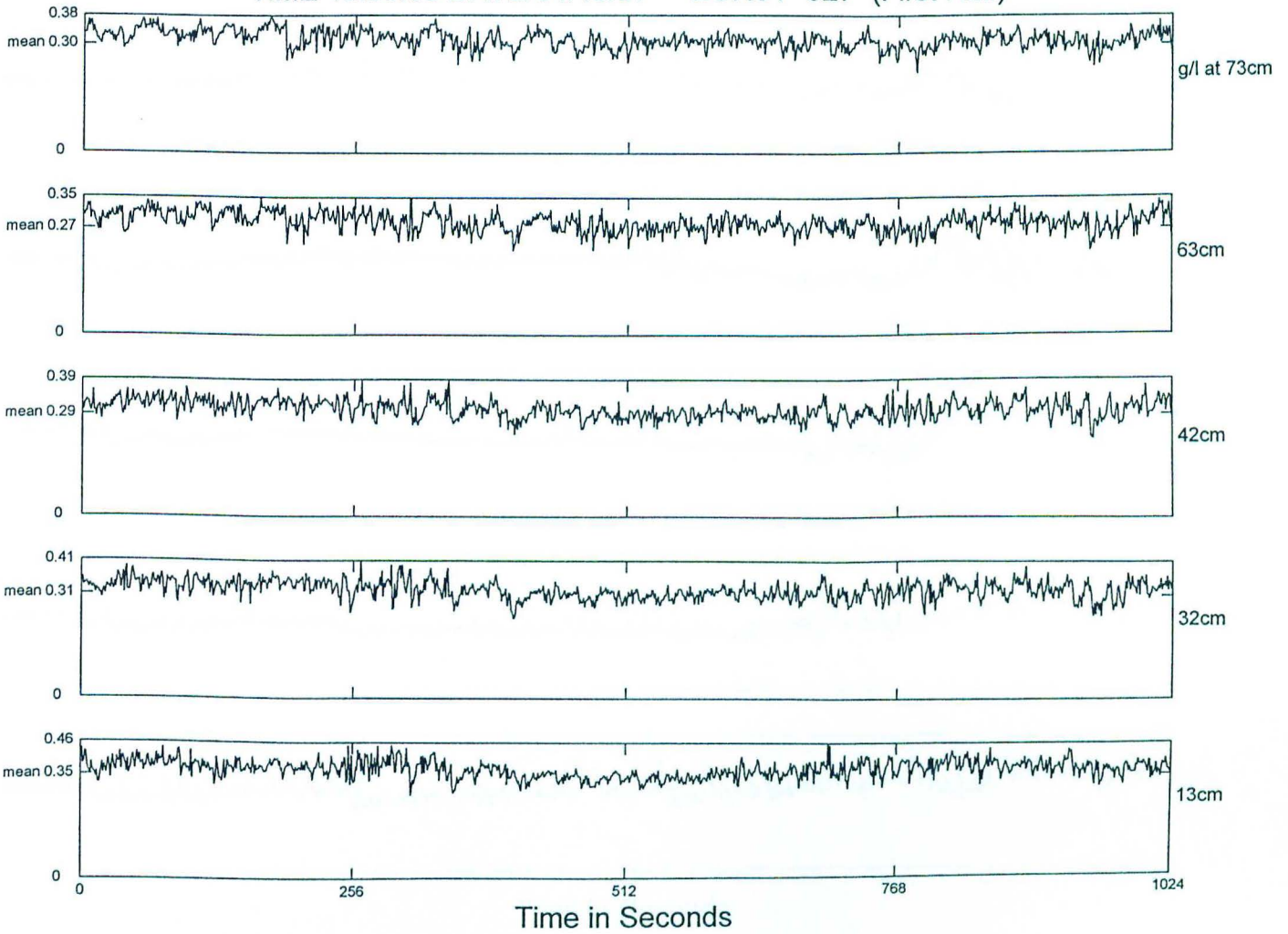
OBS Burst Data from Strataform G-60 Deep Pod
TIME 20:00:00 DATE 01/09/97 BURST 291 (First Half)



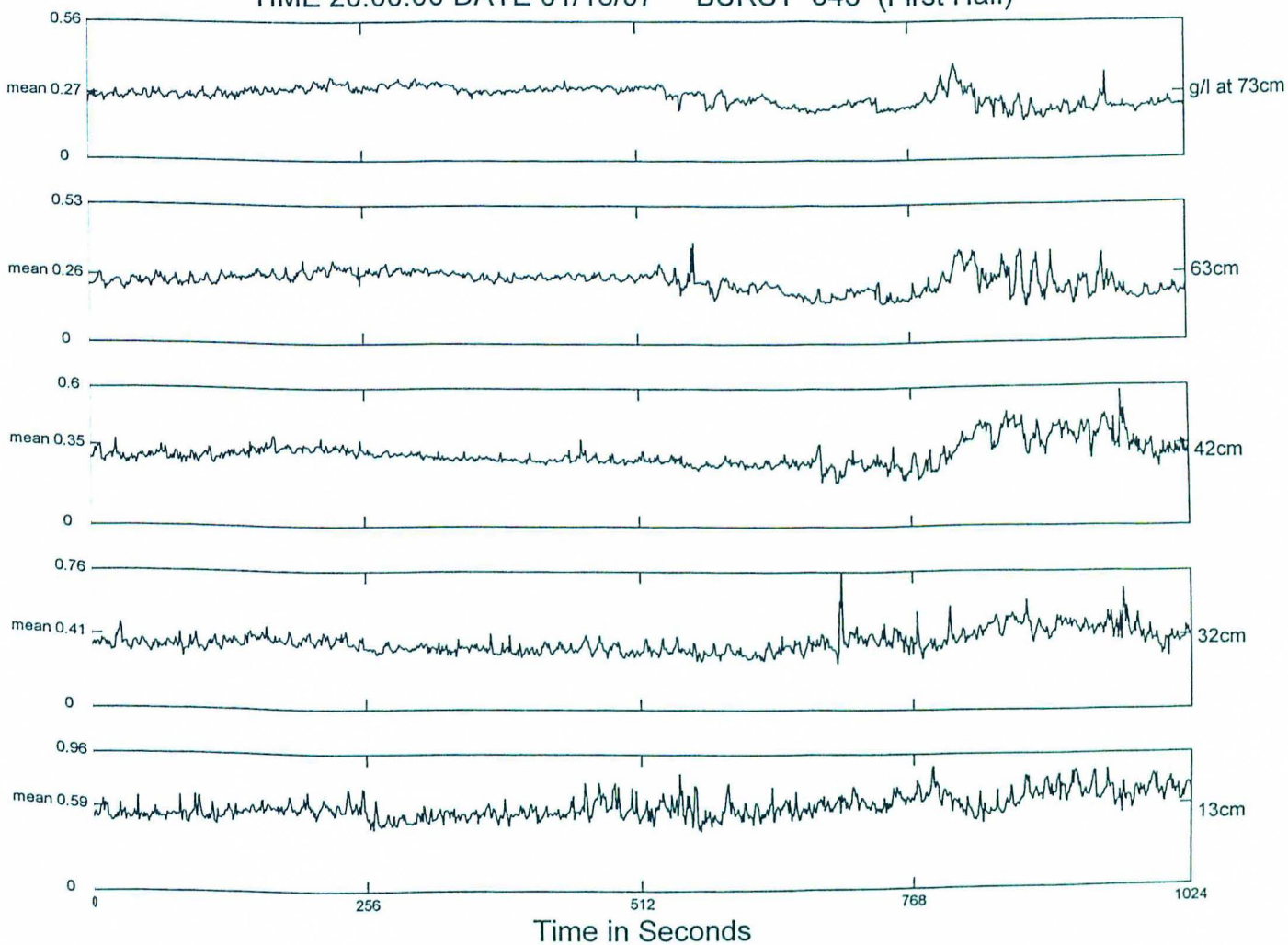
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TIME 20:00:00 DATE 01/12/97 BURST 309 (First Half)



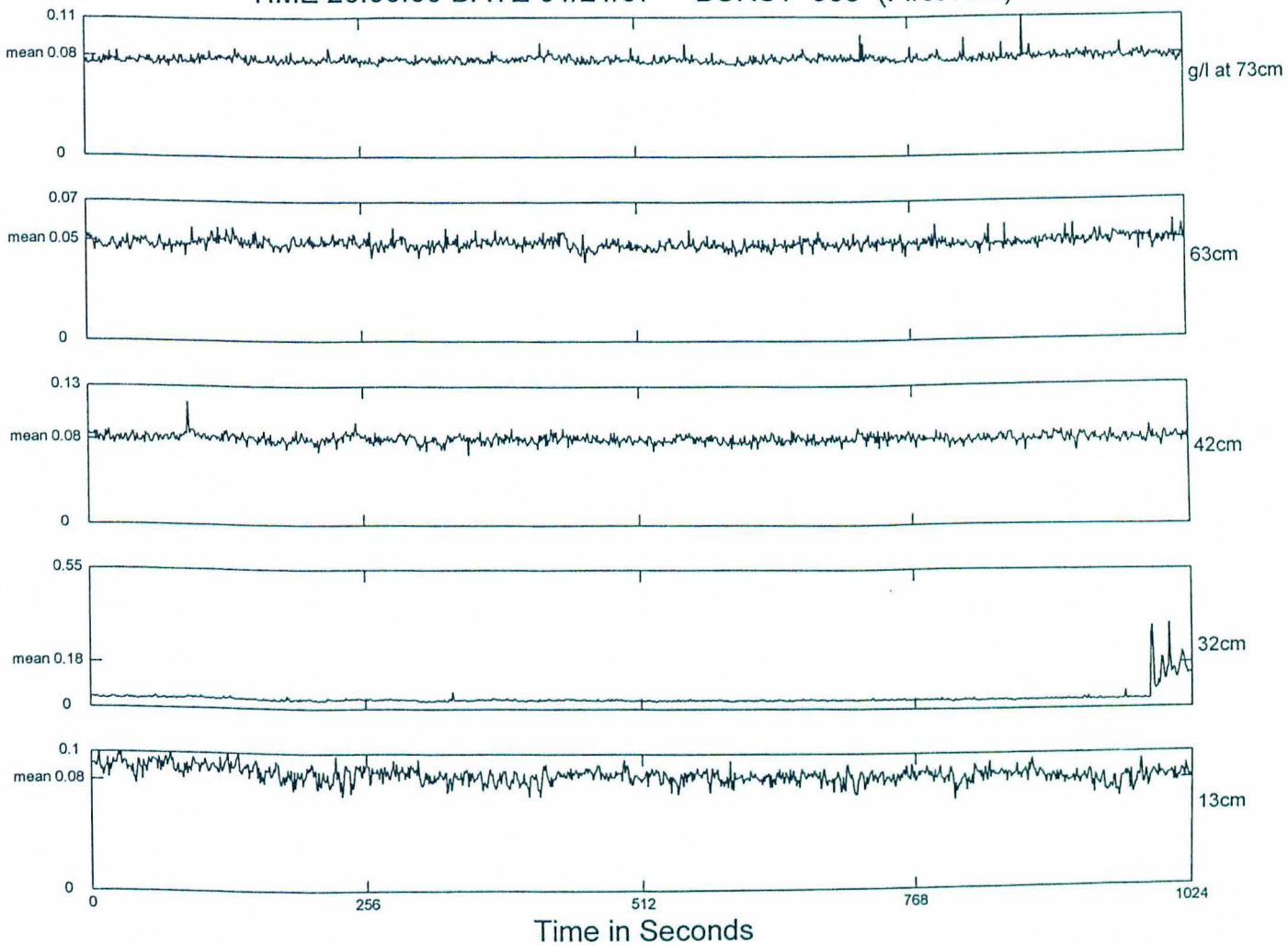
OBS Burst Data from Strataform G-60 Deep Pod
TIME 19:59:59 DATE 01/15/97 BURST 327 (First Half)



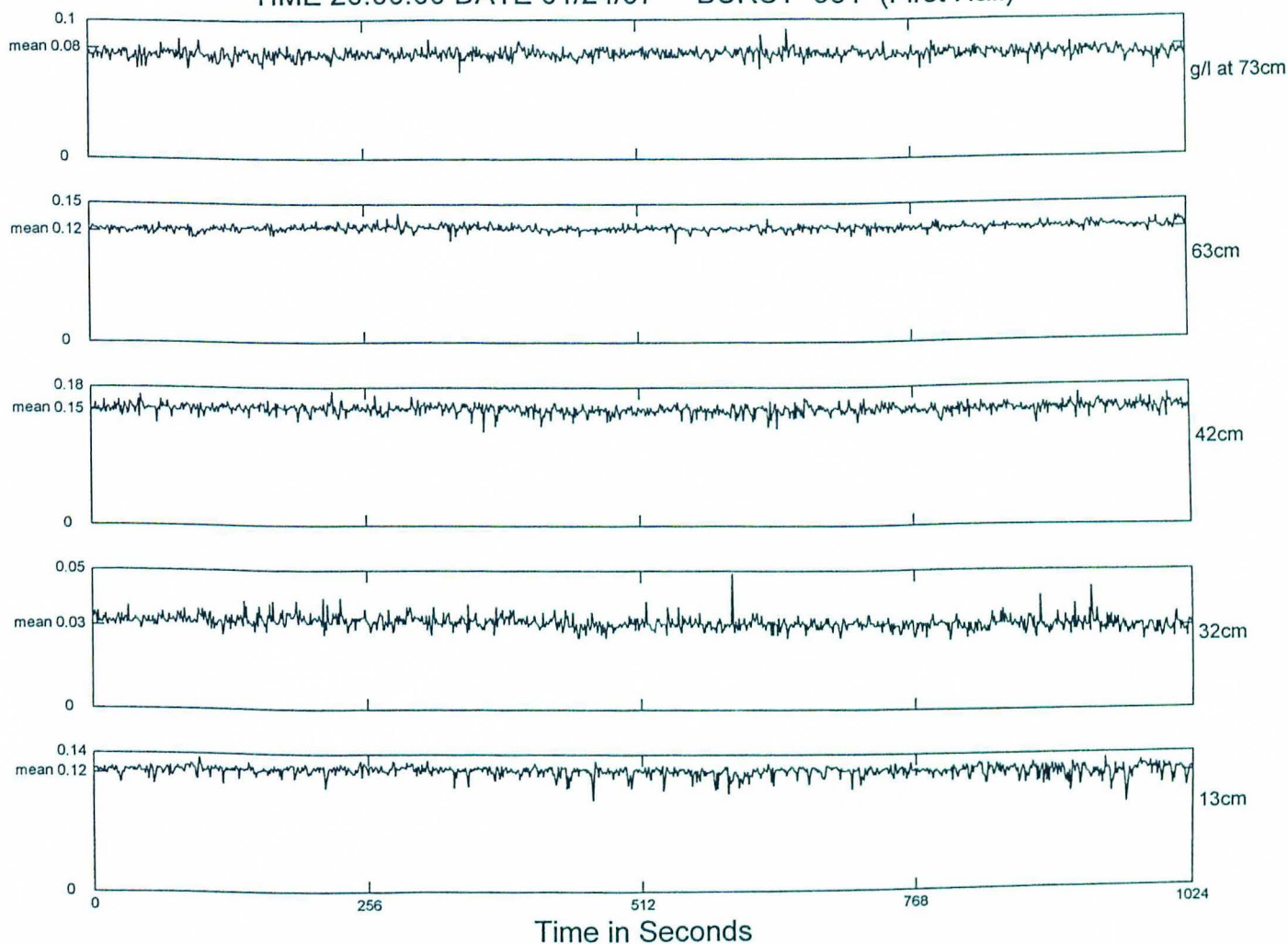
OBS Burst Data from Strataform G-60 Deep Pod
TIME 20:00:00 DATE 01/18/97 BURST 345 (First Half)



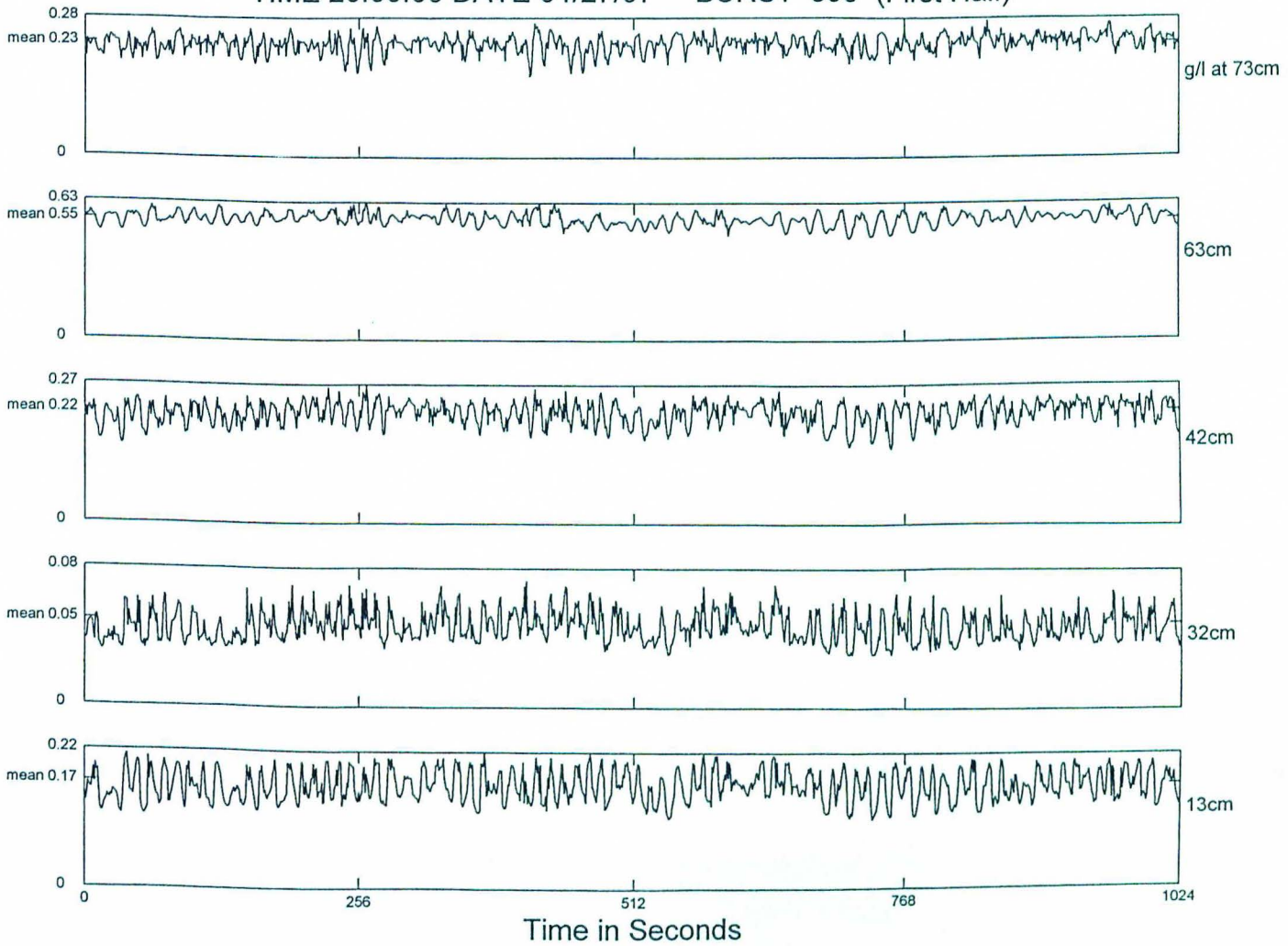
OBS Burst Data from Strataform G-60 Deep Pod
TIME 20:00:00 DATE 01/21/97 BURST 363 (First Half)



OBS Burst Data from Strataform G-60 Deep Pod
TIME 20:00:00 DATE 01/24/97 BURST 381 (First Half)



OBS Burst Data from Strataform G-60 Deep Pod
TIME 20:00:00 DATE 01/27/97 BURST 399 (First Half)



Strata Formation on Margins (STRATAFORM)
VIMS G-60 Benthic Boundary Layer Tripod Data Files
November 1996 - January 1997
SRAMSOE No. 344
D. A. Hepworth, C. T. Friedrichs, and L. D. Wright

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