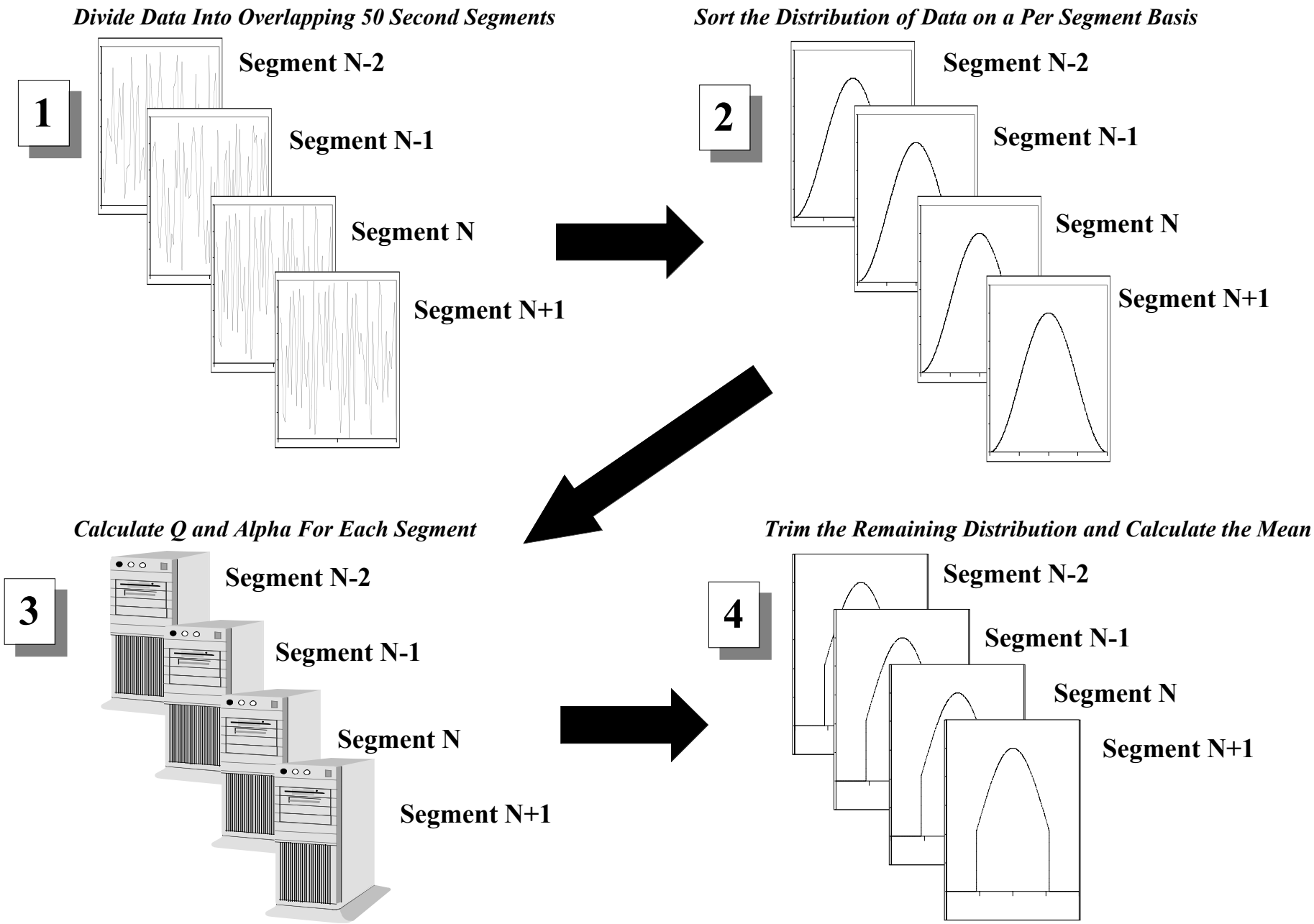
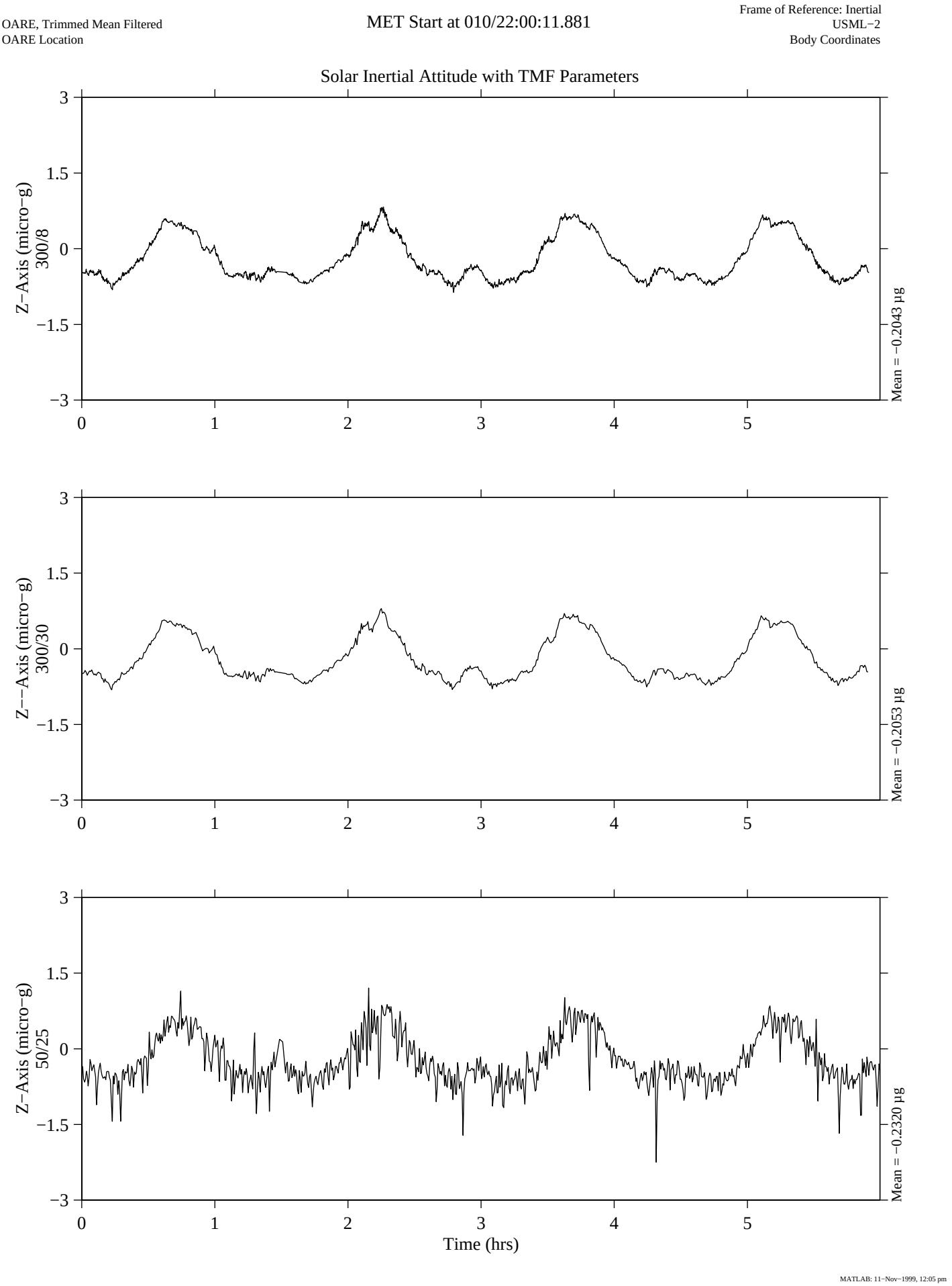
TMF Process



MEIT 1999 Figure 6-1

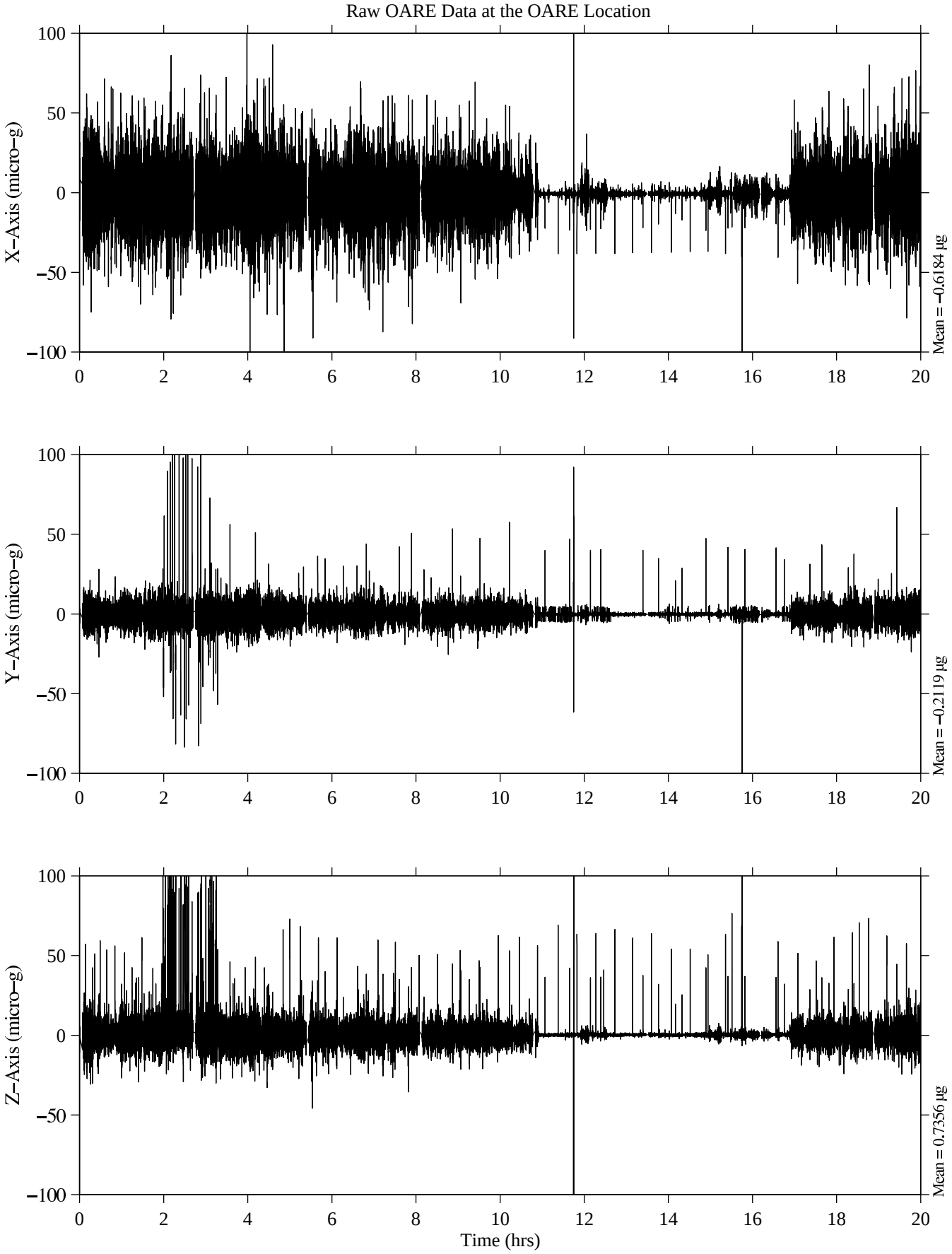


MEIT 1999 Figure 6-2: OARE TMF Data Showing TMF Parameter Comparison from STS-73 (USML-2)

OARE, Raw Data
OARE Location

MET Start at 006/00:00:00.000

Frame of Reference: Orbiter
LMS
Body Coordinates

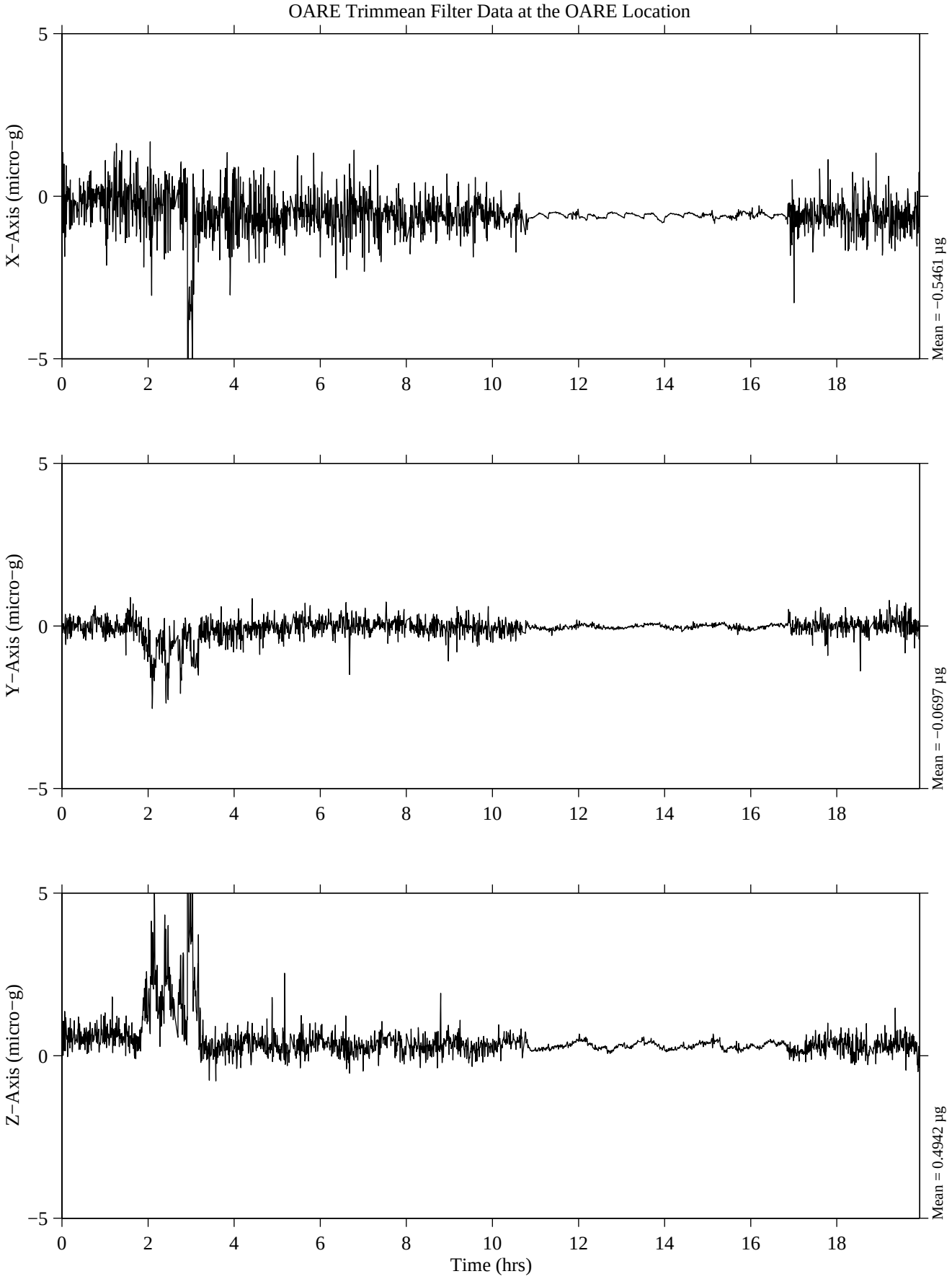


MATLAB: 05−Aug−1997, 02:49 pm

OARE, Trimmed Mean Filtered
OARE Location

MET Start at 006/00:04:14.160

Frame of Reference: Orbiter
LMS
Body Coordinates

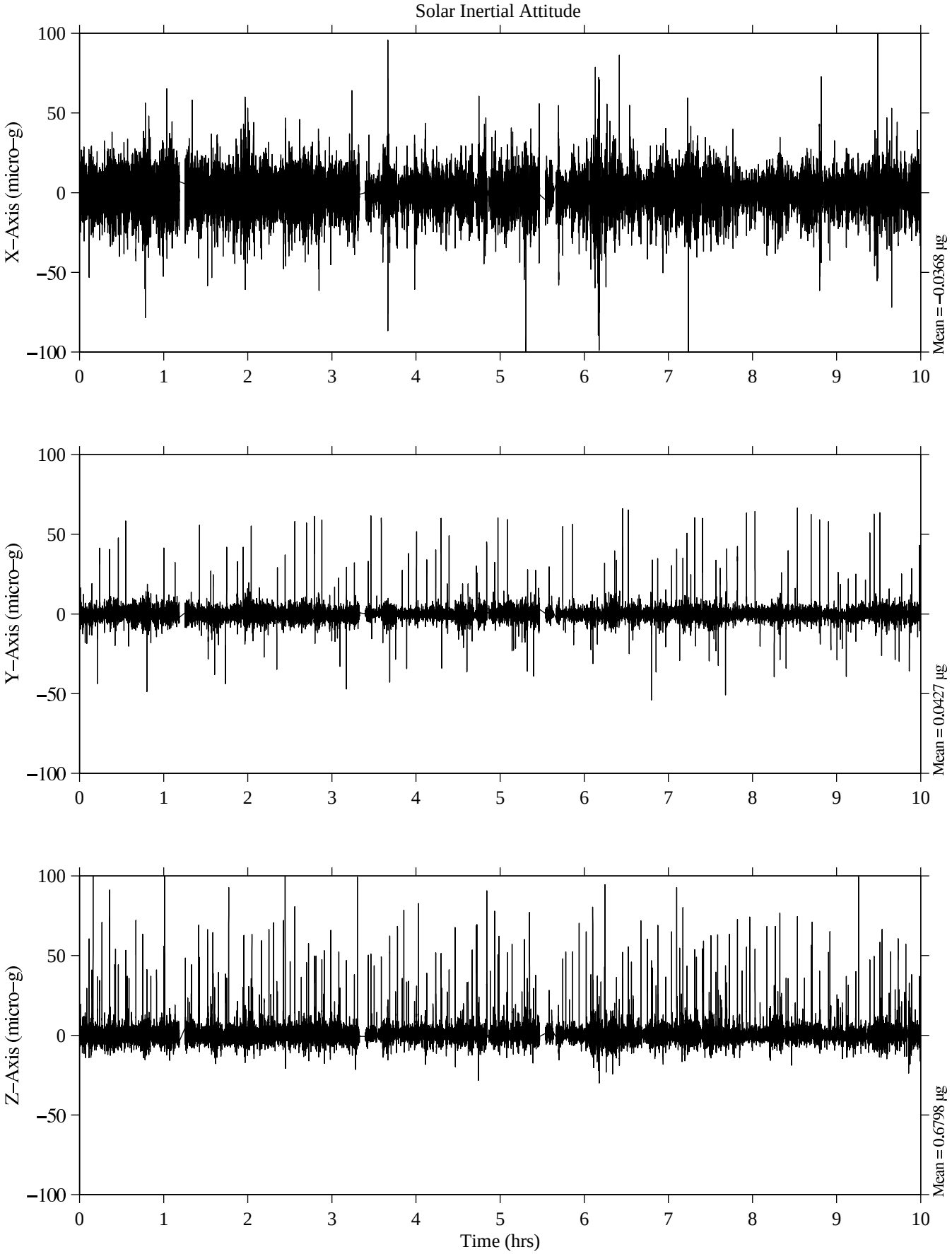


MEIT 1999 Figure 6-4: OARE TMF Data During Water Dump and Attitude Change from STS-78 (LMS)

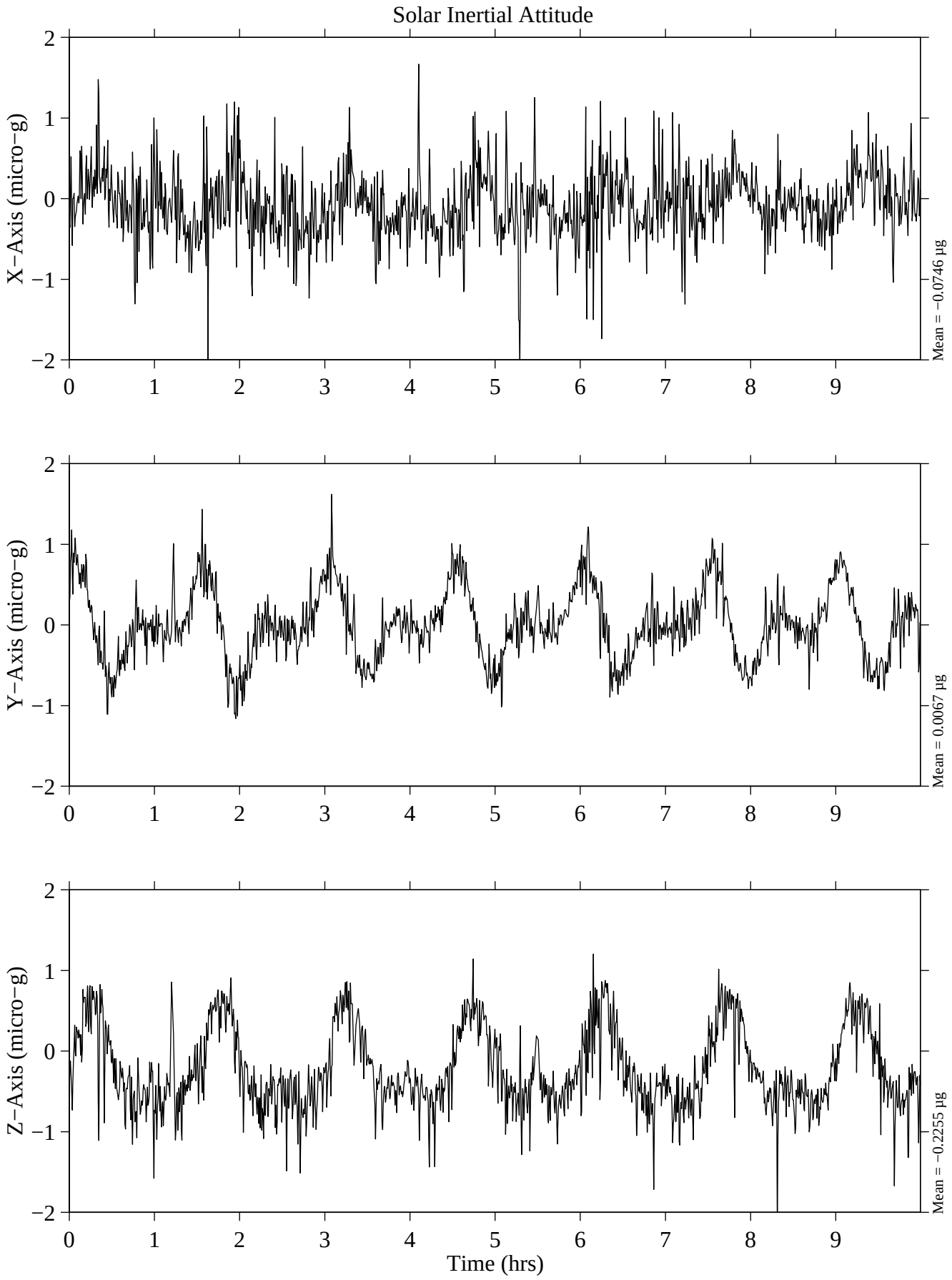
OARE, Raw Data
OARE

MET Start at 010/18:00:00.000

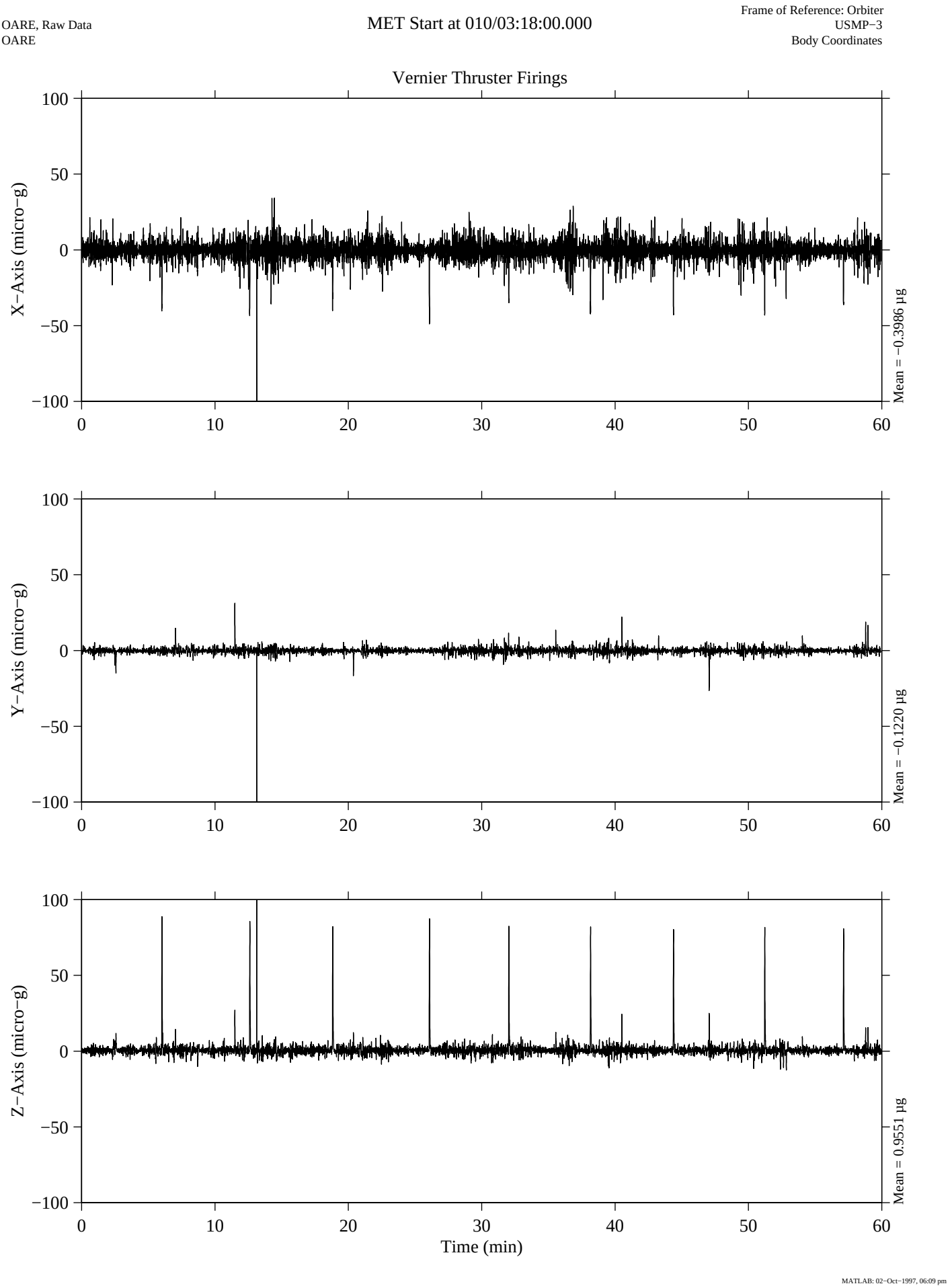
Frame of Reference: Orbiter
USML−2
Body Coordinates



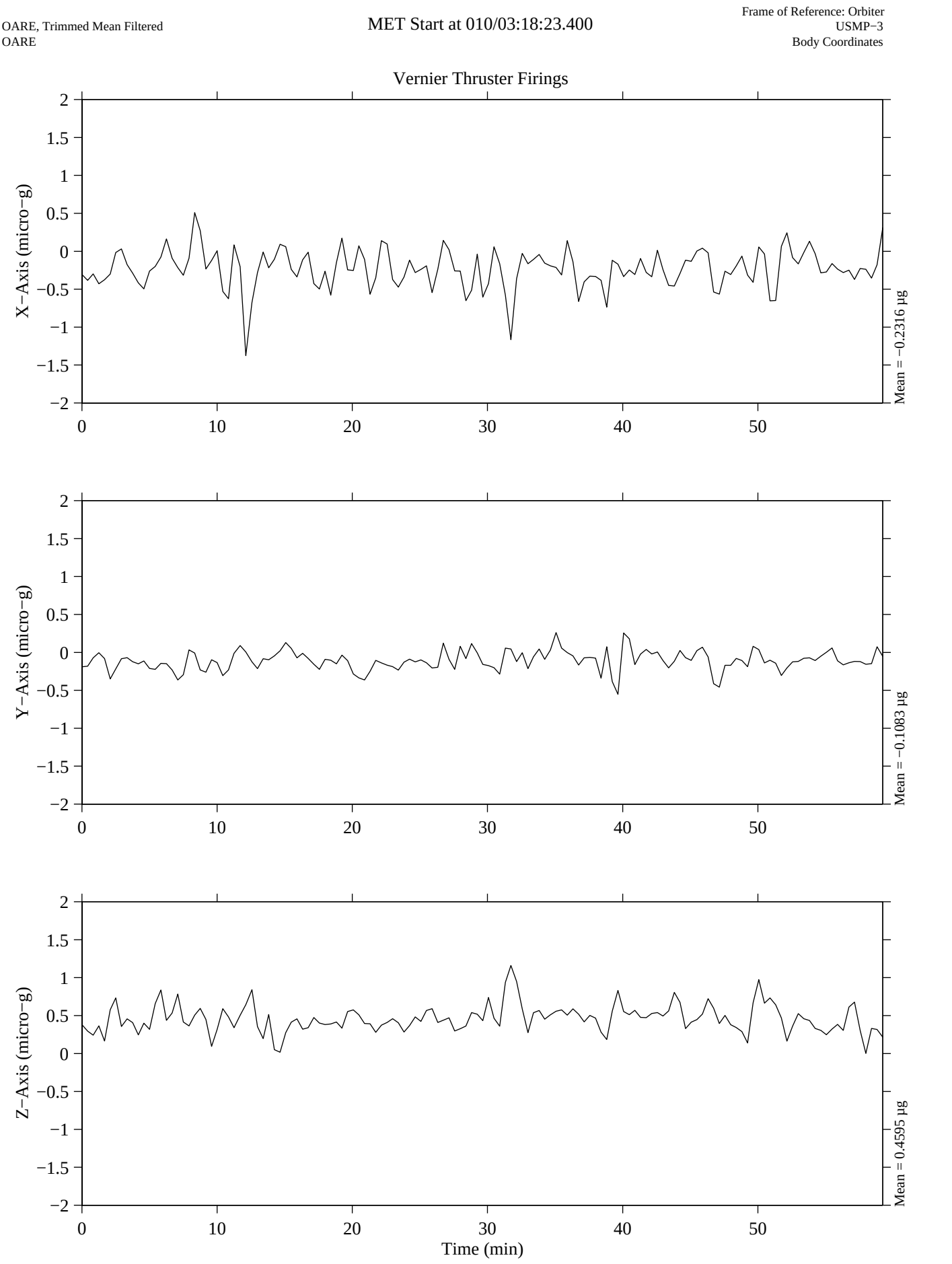
MATLAB: 02−Oct−1997, 05:44 pm



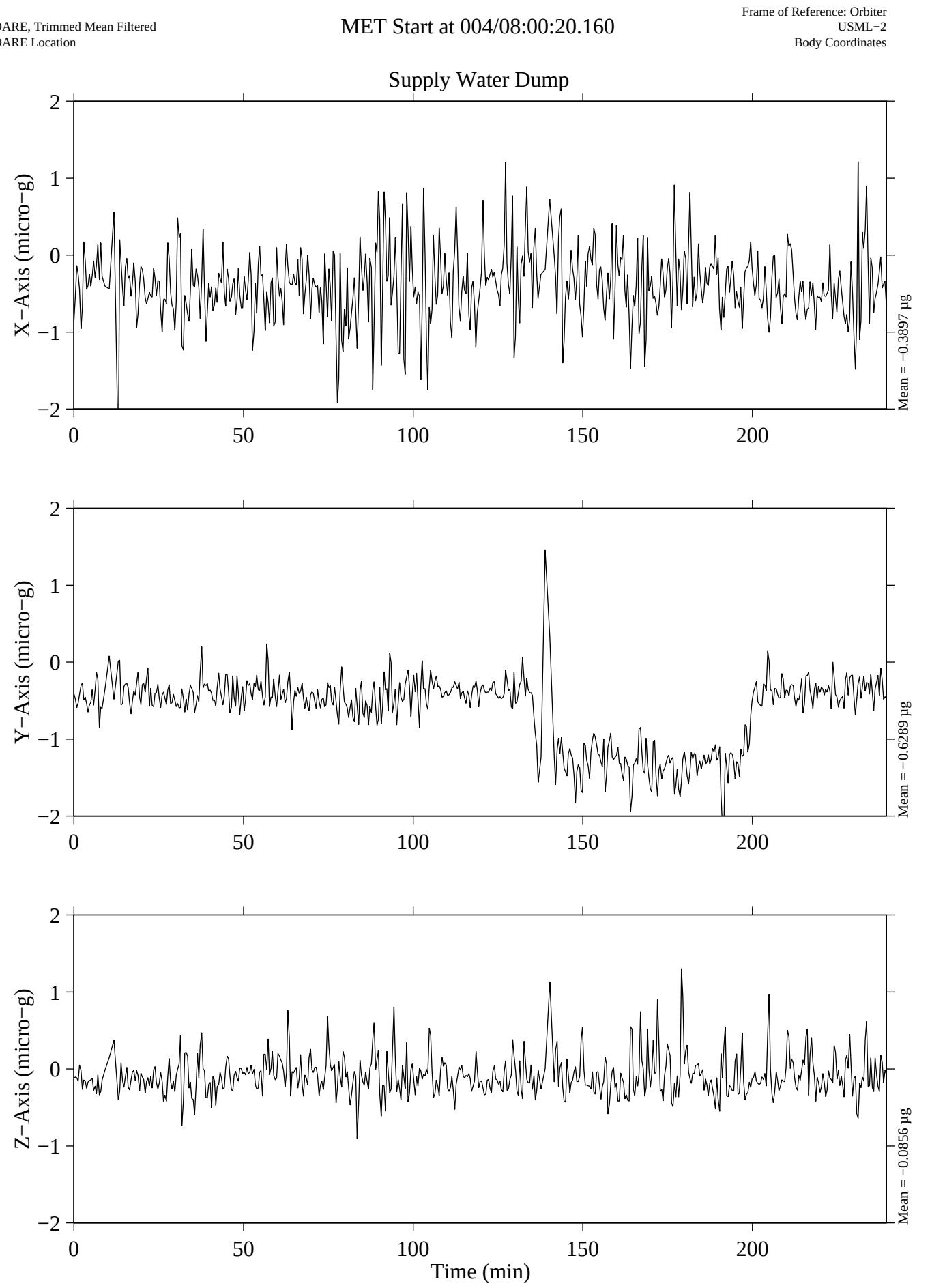
MEIT 1999 Figure 6-6: OARE TMF Data During Solar Inertial Attitude from STS-73 (USML-2)



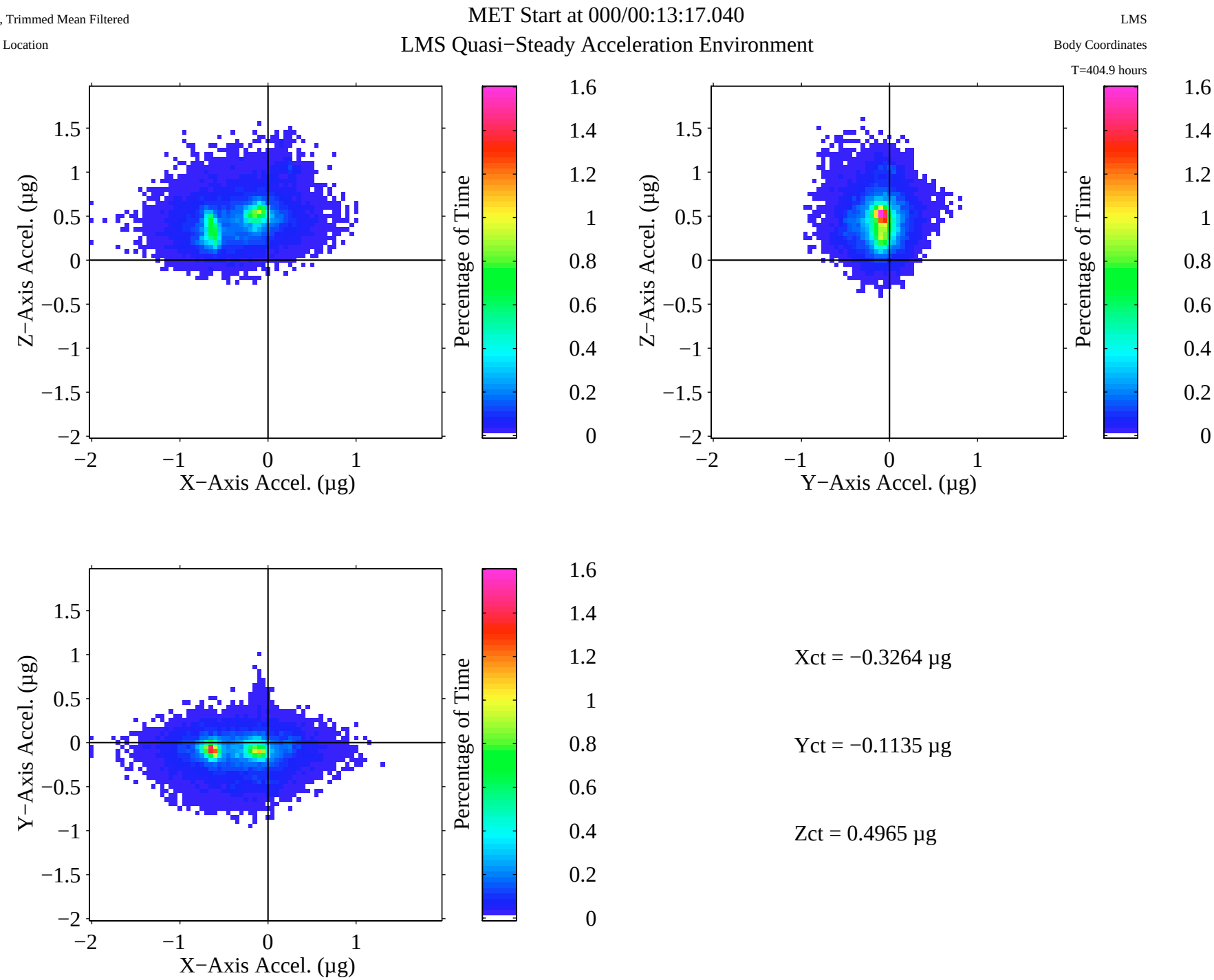
MEIT 1999 Figure 6-7: Raw OARE Data Showing Vernier Thruster Firings from STS-75 (USMP-3)



MEIT 1999 Figure 6-8: OARE TMF Data Showing Vernier Thruster Firings from STS-75 (USMP-3)



MEIT 1999 Figure 6-9: OARE TMF Data Showing Water Dump from STS-73 (USML-2)

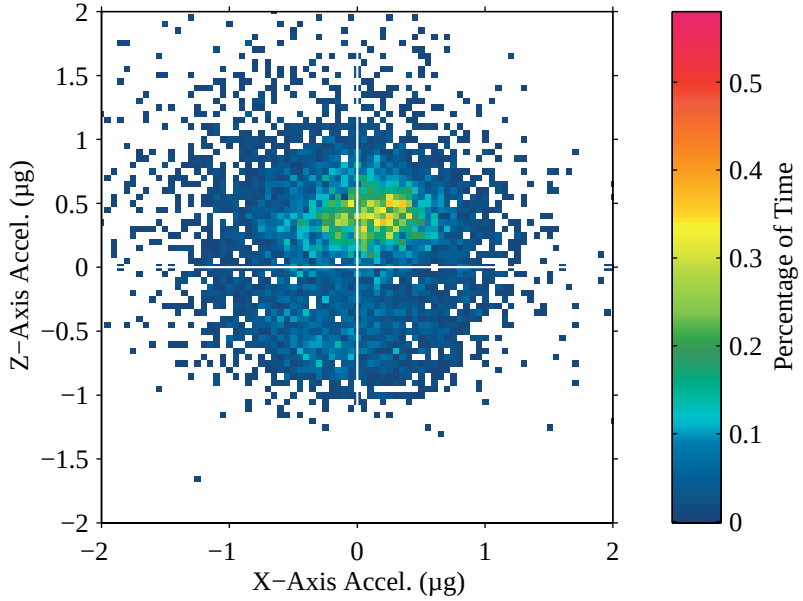


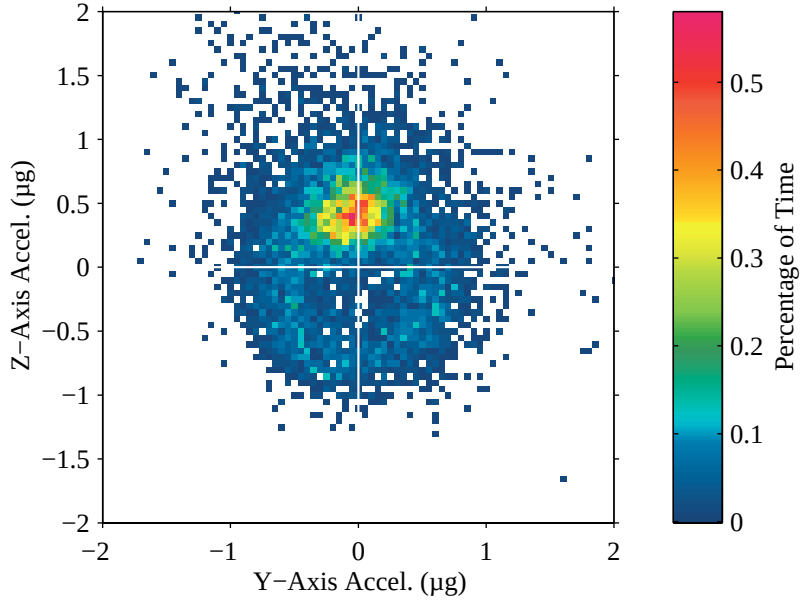
MEIT 1999 Figure 6-10: Quasi-Steady Three-Dimensional Histogram Plot for Entire STS-78 (LMS) Mission

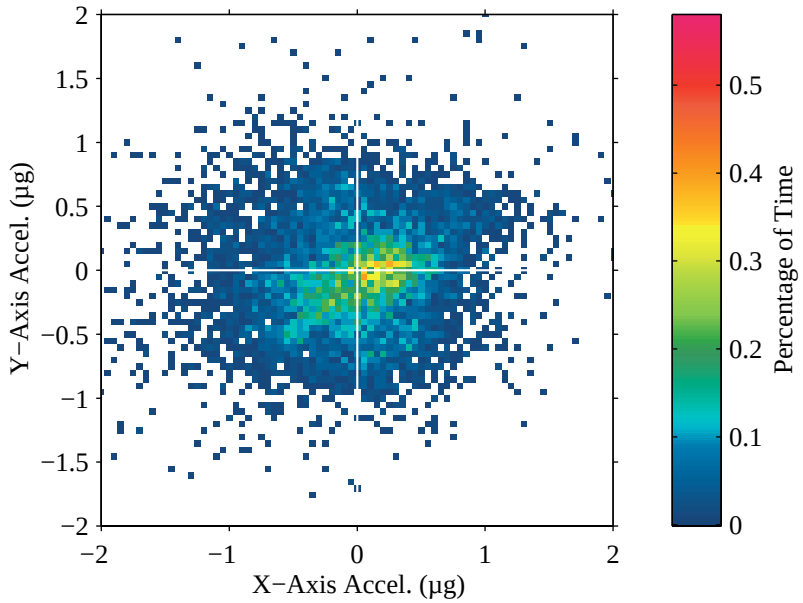
OARE, Trimmed Mean Filtered

OARE

USML−2 (STS−73) Solar Inertial Attitude







Body Coordinates

Frame of Reference: Orbiter

T = 150.5 hours

MATLAB: 06−Mar−1998, 09:15 am

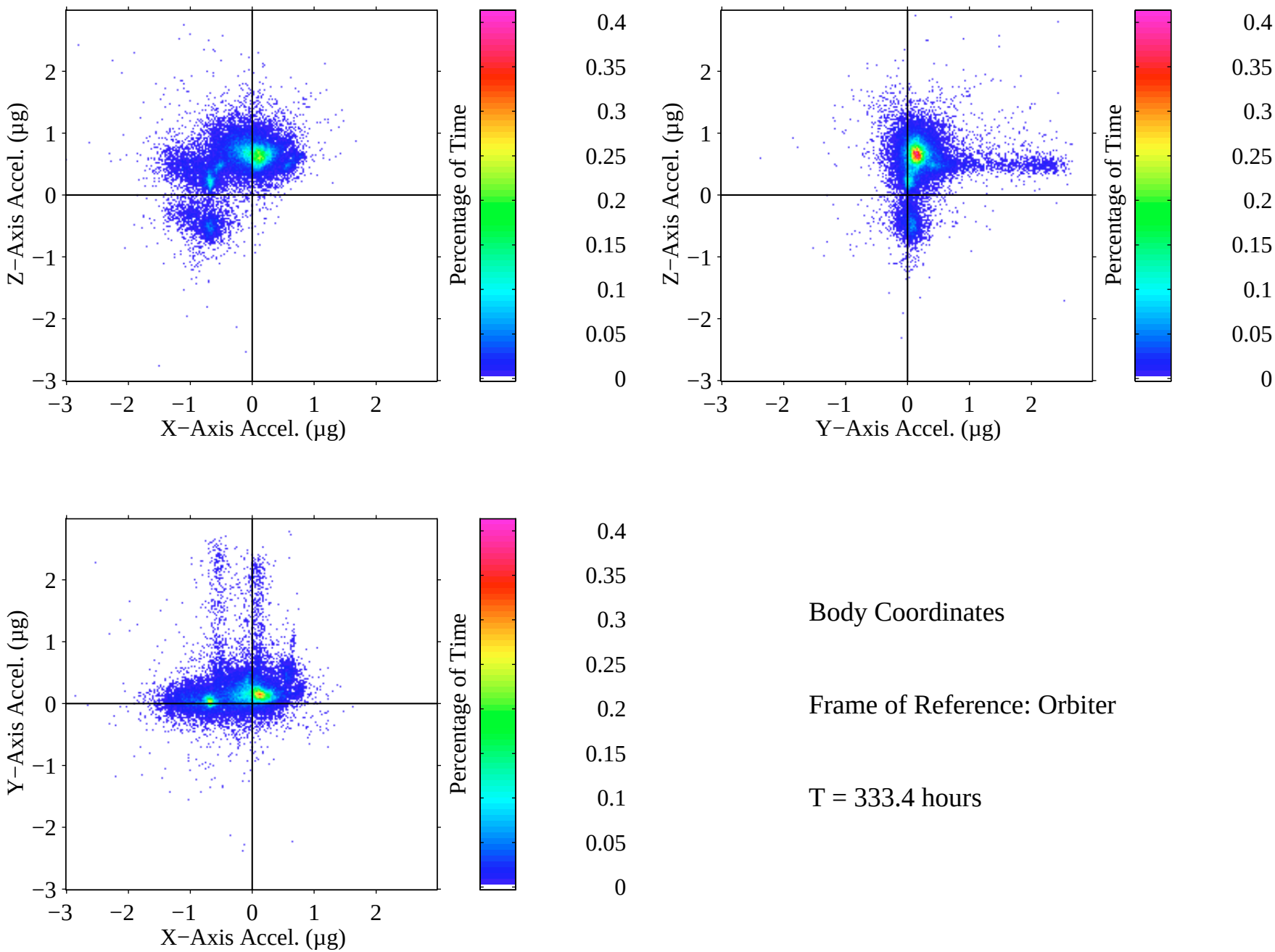
MEIT 1999 Figure 6-11: Quasi-Steady Three-Dimensional Histogram Plot for Solar Inertial Attitude from STS-73 (USML-2)

OARE, Trimmed Mean Filtered

OARE Location

MET Start at 000/00:12:16.920

USMP−2 (STS−62) Mission Plot



Body Coordinates

Frame of Reference: Orbiter

T = 333.4 hours

MATLAB: 1−Feb−97, 10:45 am

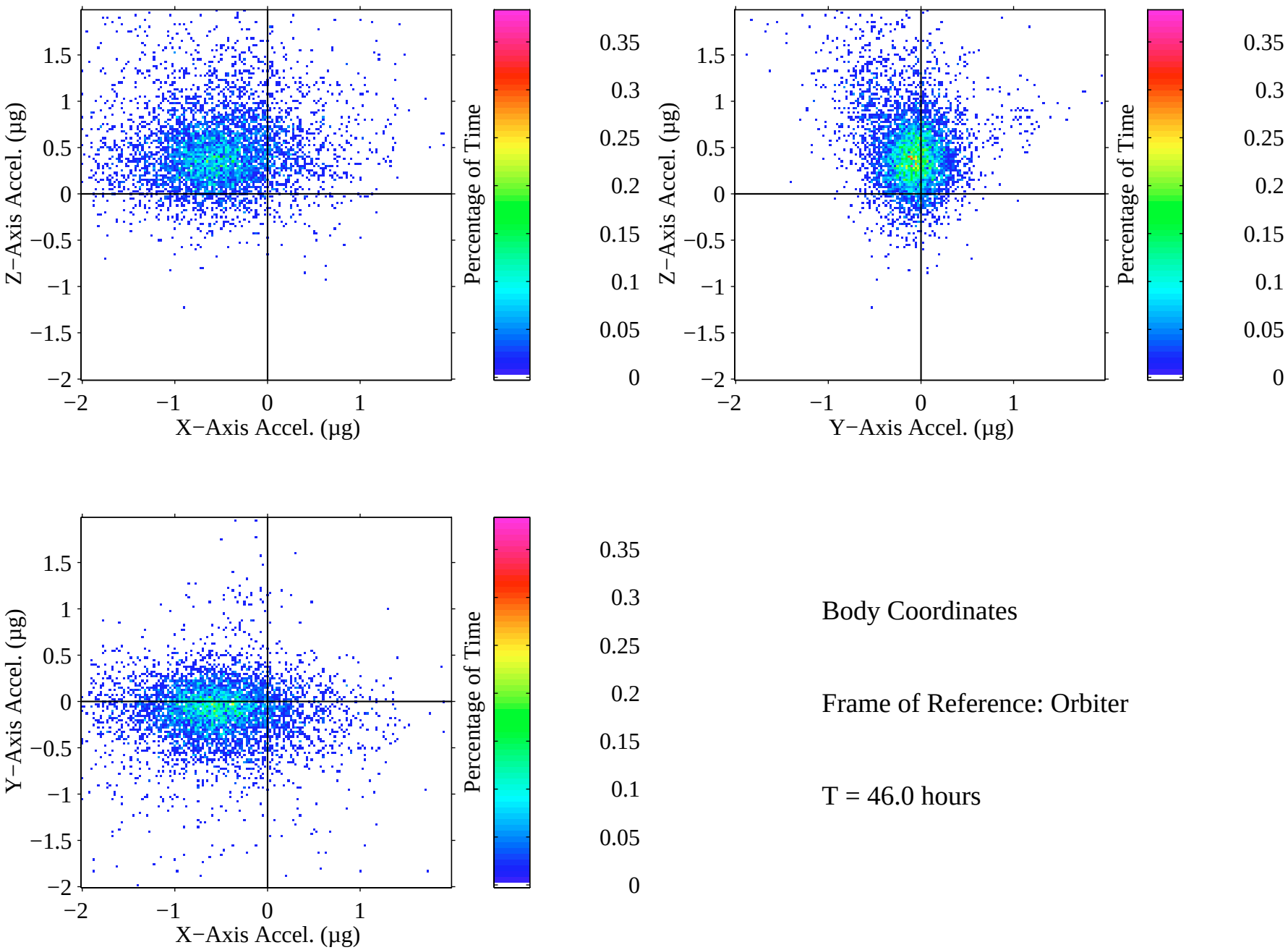
MEIT 1999 Figure 6-12: Quasi-Steady Three-Dimensional Histogram Plot for Entire STS-62 (USMP-2) Mission

OARE, Trimmed Mean Filtered

OARE Location

MET Start at 008/17:00:16.920

LMS Mission − Crew Active Periods



MATLAB: 1−Feb−97, 10:31 am

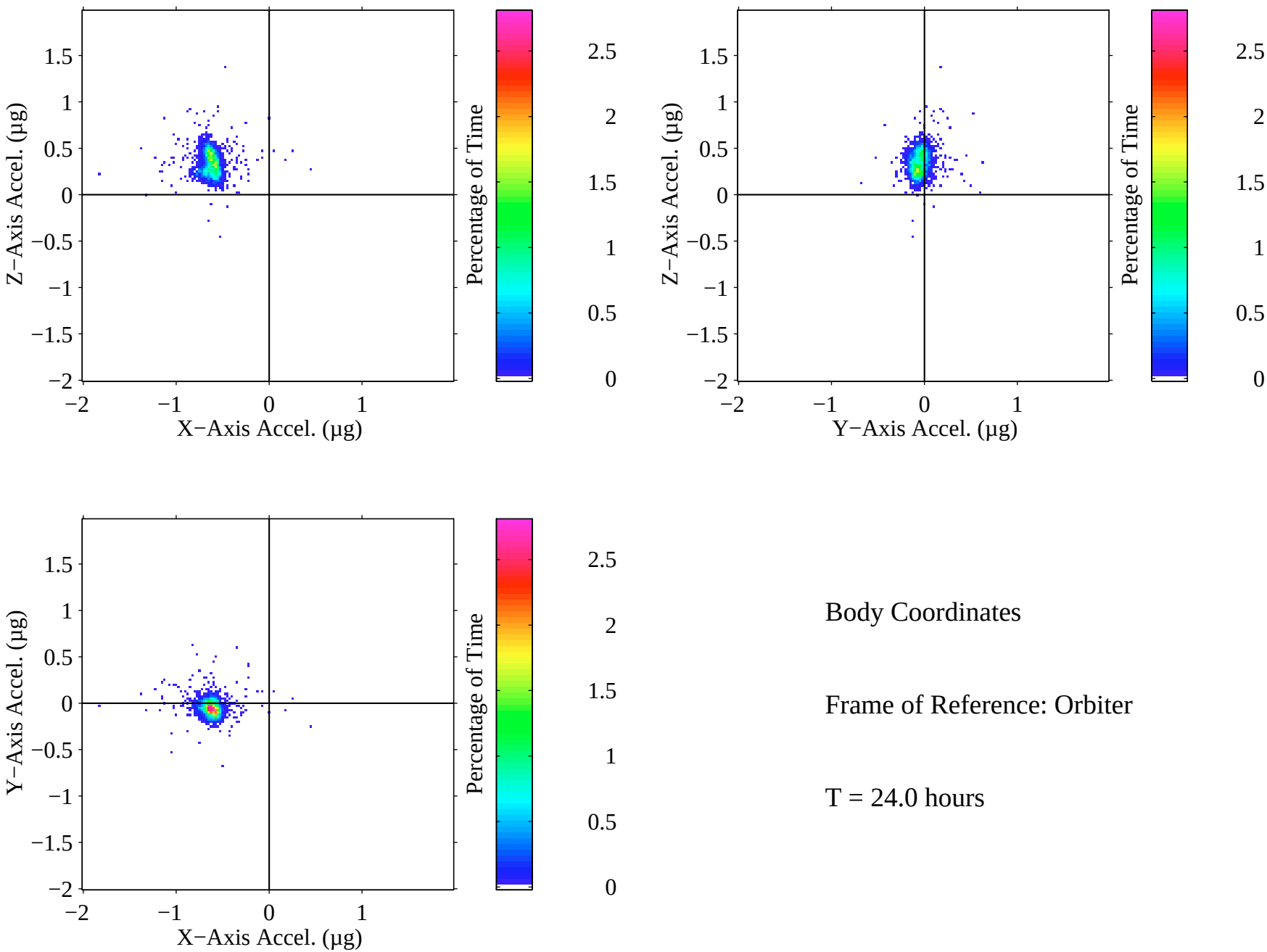
MEIT 1999 Figure 6-13: Quasi-Steady Three-Dimensional Histogram Plot Crew Active Period STS-78 (LMS)

OARE, Trimmed Mean Filtered

OARE Location

MET Start at 009/09:00:07.920

LMS Mission − Sleep Cycles



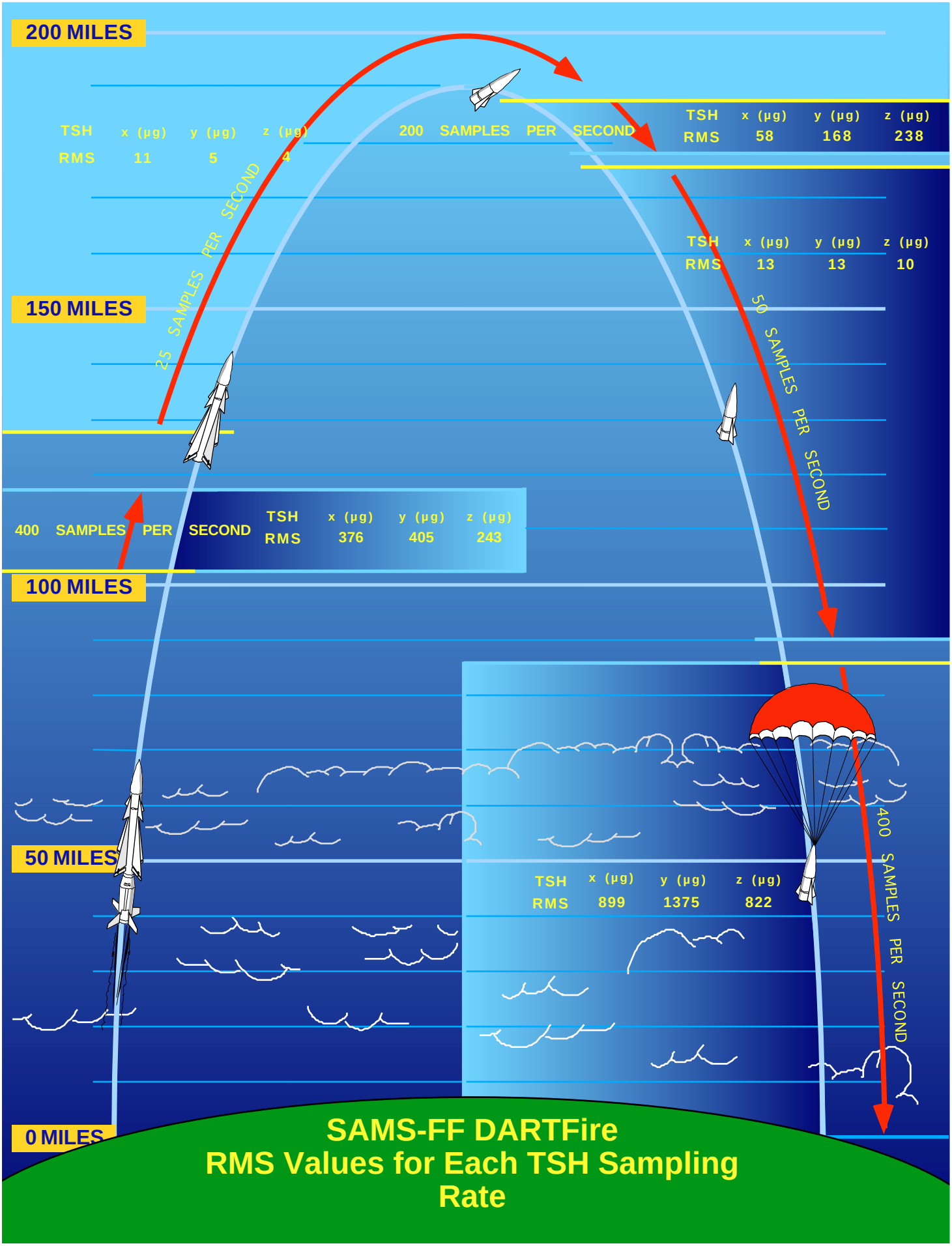
Body Coordinates

Frame of Reference: Orbiter

T = 24.0 hours

MATLAB: 1−Feb−97, 10:21 am

MEIT 1999 Figure 6-14: Quasi-Steady Three-Dimensional Histogram Plot Crew Sleep Period STS-78 (LMS)



SAMS-FF DARTFire
RMS Values for Each TSH Sampling Rate

Head SAMS−FF DATA, 6.55 Hz

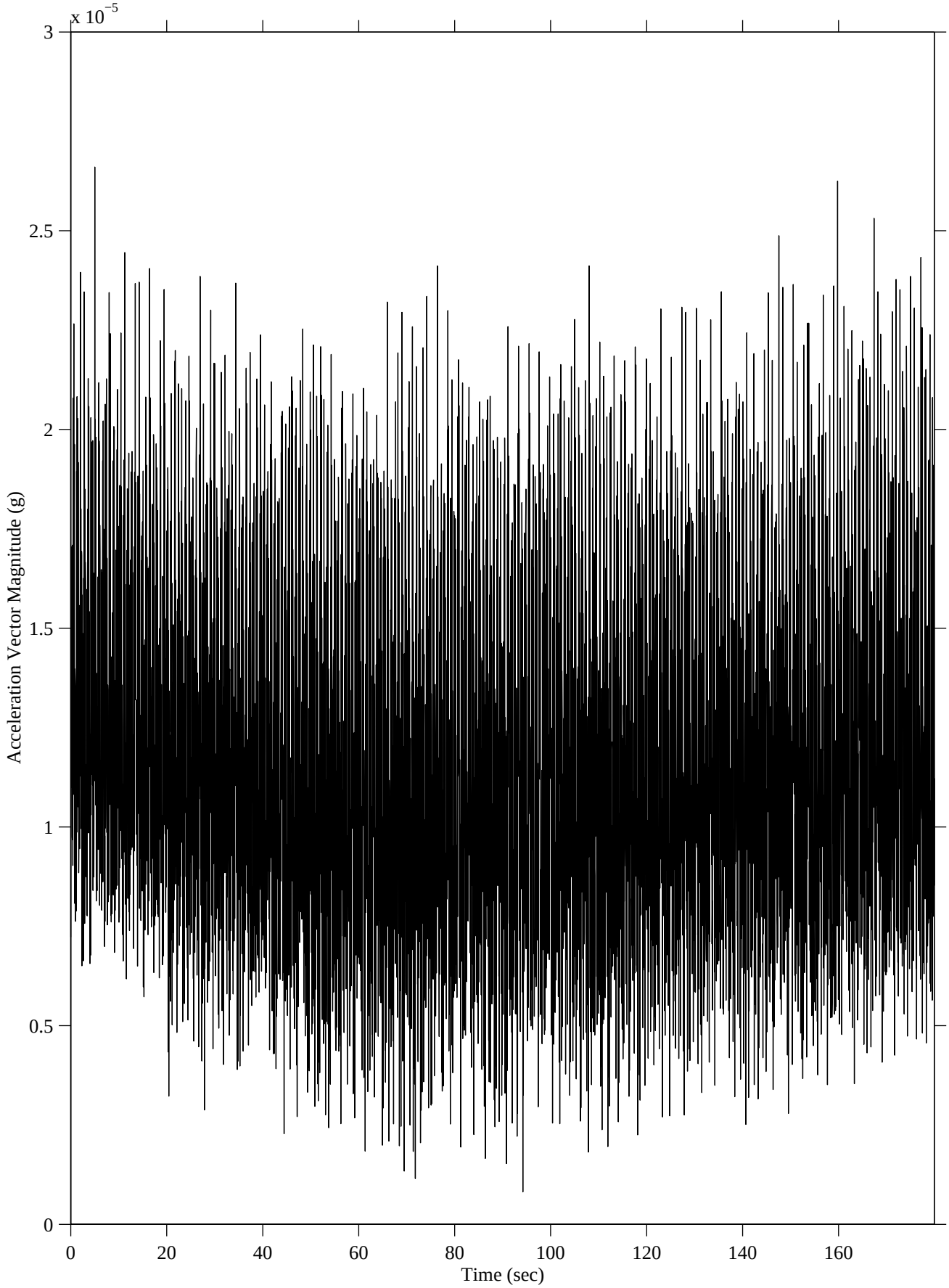
MET Start at 000/00:02:05.027

DARTFire Mission

fs= 25 samples per second

Acceleration Vector Magnitude for Fs=25

SAMS−FF Coordinates



MATLAB: 11−Aug−1998, 06:02 pm

Head SAMS−FF DATA, 6.55 Hz

DARTFire Mission

MET Start at 000/00:02:05.027, Hanning k=8

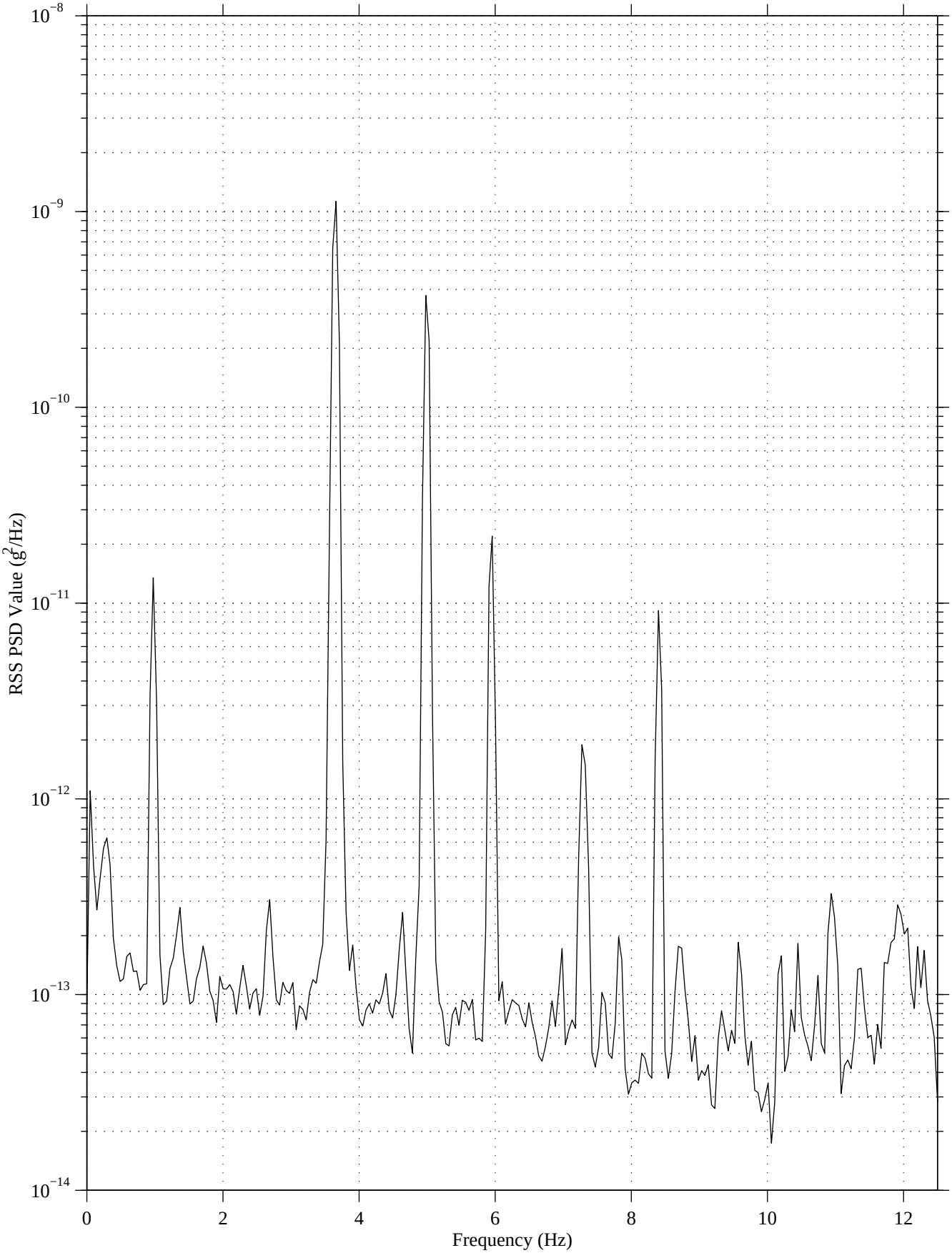
fs= 25 samples per second

SAMS−FF Coordinates

RSS Power Spectral Density for Fs=25

dF= 0.048828 Hz

T= 179.988 sec

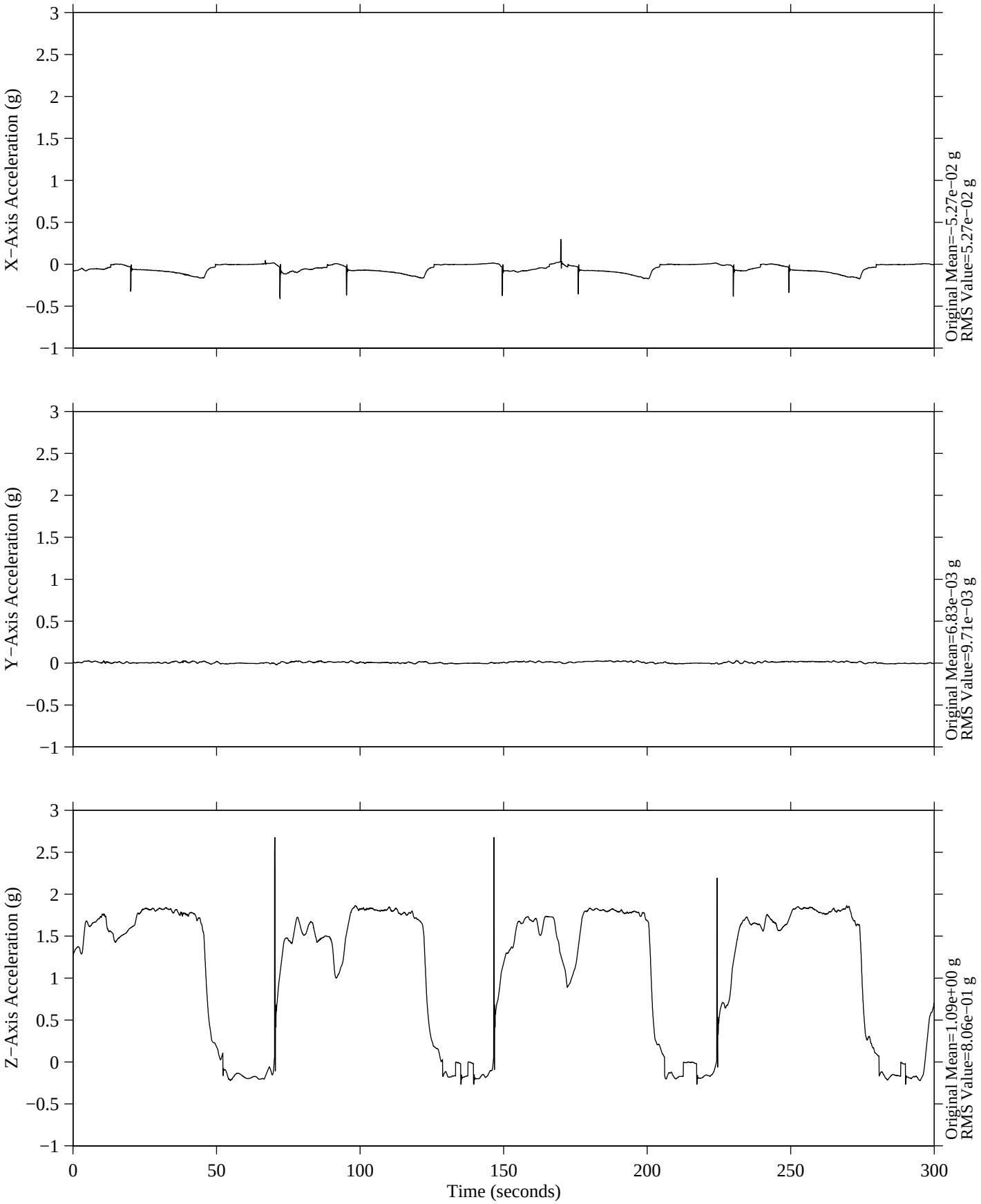


MATLAB: 11−Aug−1998, 06:05 pm

Head C, 5.0 Hz
fs=25.0 samples per second

KC−135
KC−135 Coordinates
T=300.0 seconds

Multiple KC−135 Parabolas Without De−Meaning
MET Start at 055/15:09:59.992



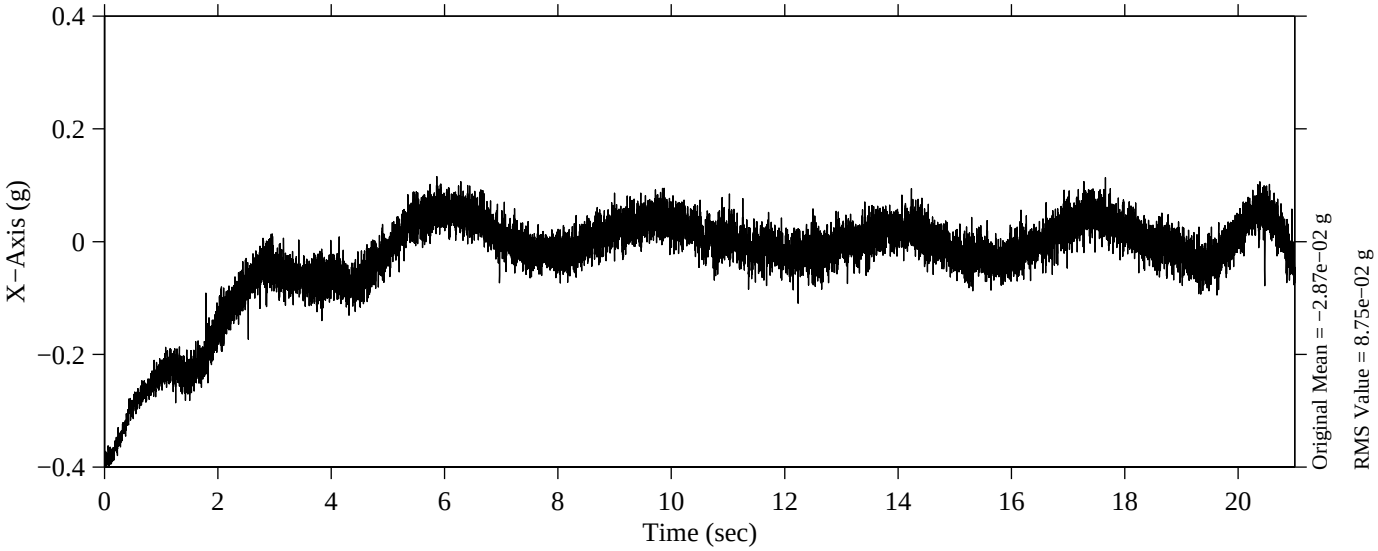
MATLAB: 13−Aug−1998, 10:35 am

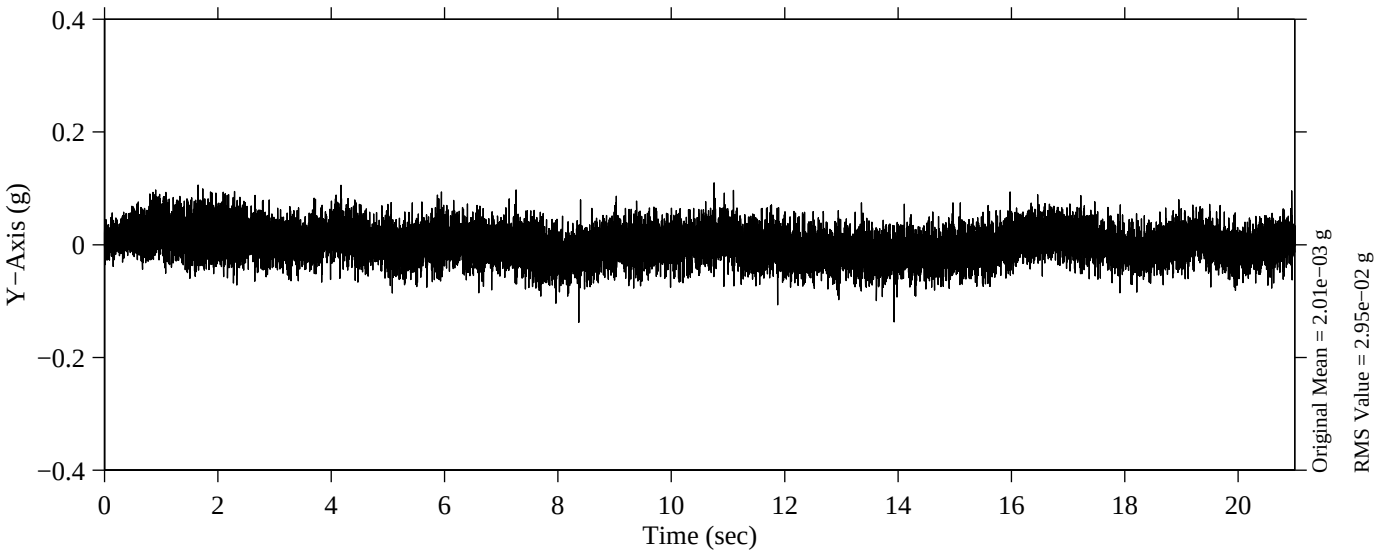
Head SAMS−FF DATA, 209.6 Hz
fs= 800 samples per second

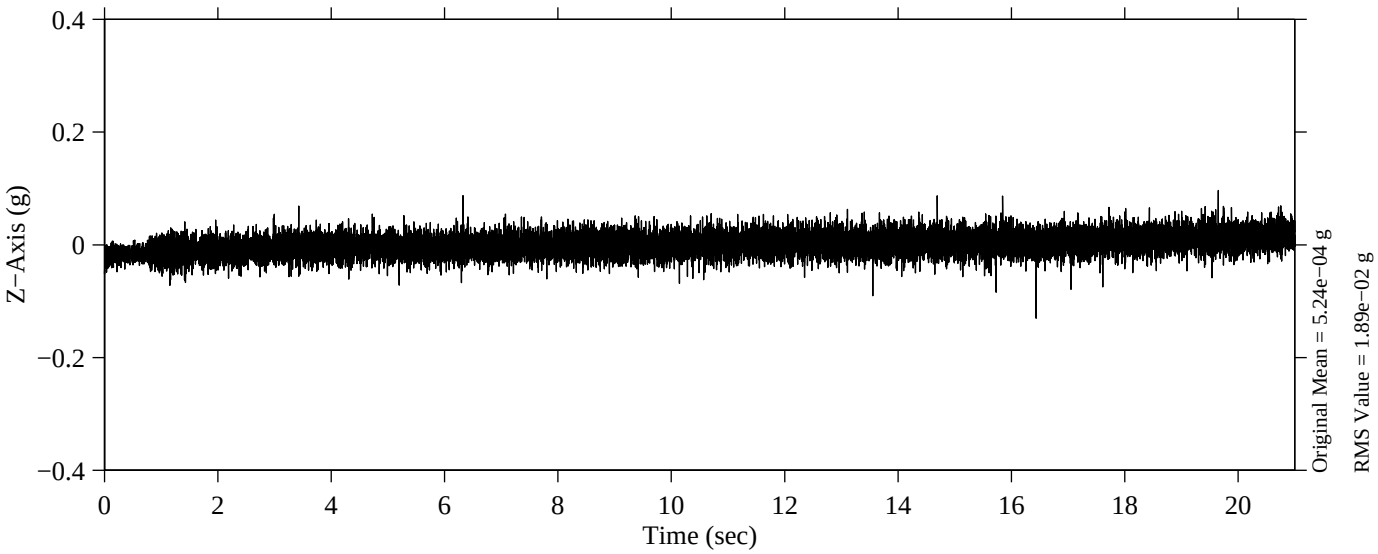
MET Start at 02/27/1998 10:35:52

uSEG Mission
SAMS−FF Coordinates

uSEG Mission: Reduced Gravity Portion of KC−135 Parabola Without De−Meaning







MATLAB: 15−Jun−1998, 04:41 pm

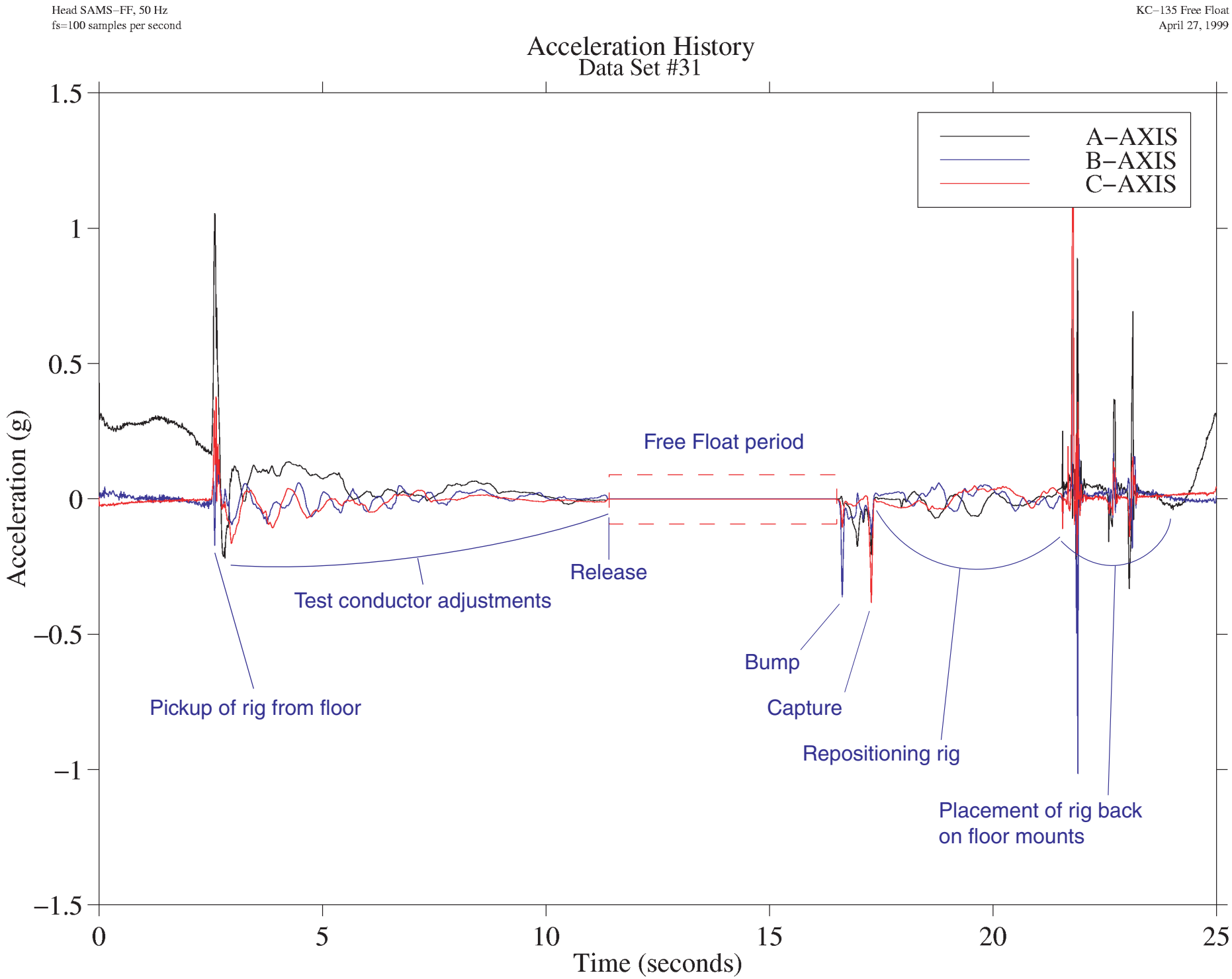


Figure 8-6: SAMS-FF Data Recorded in Support of SAL Experiment Showing Free-Float Interval

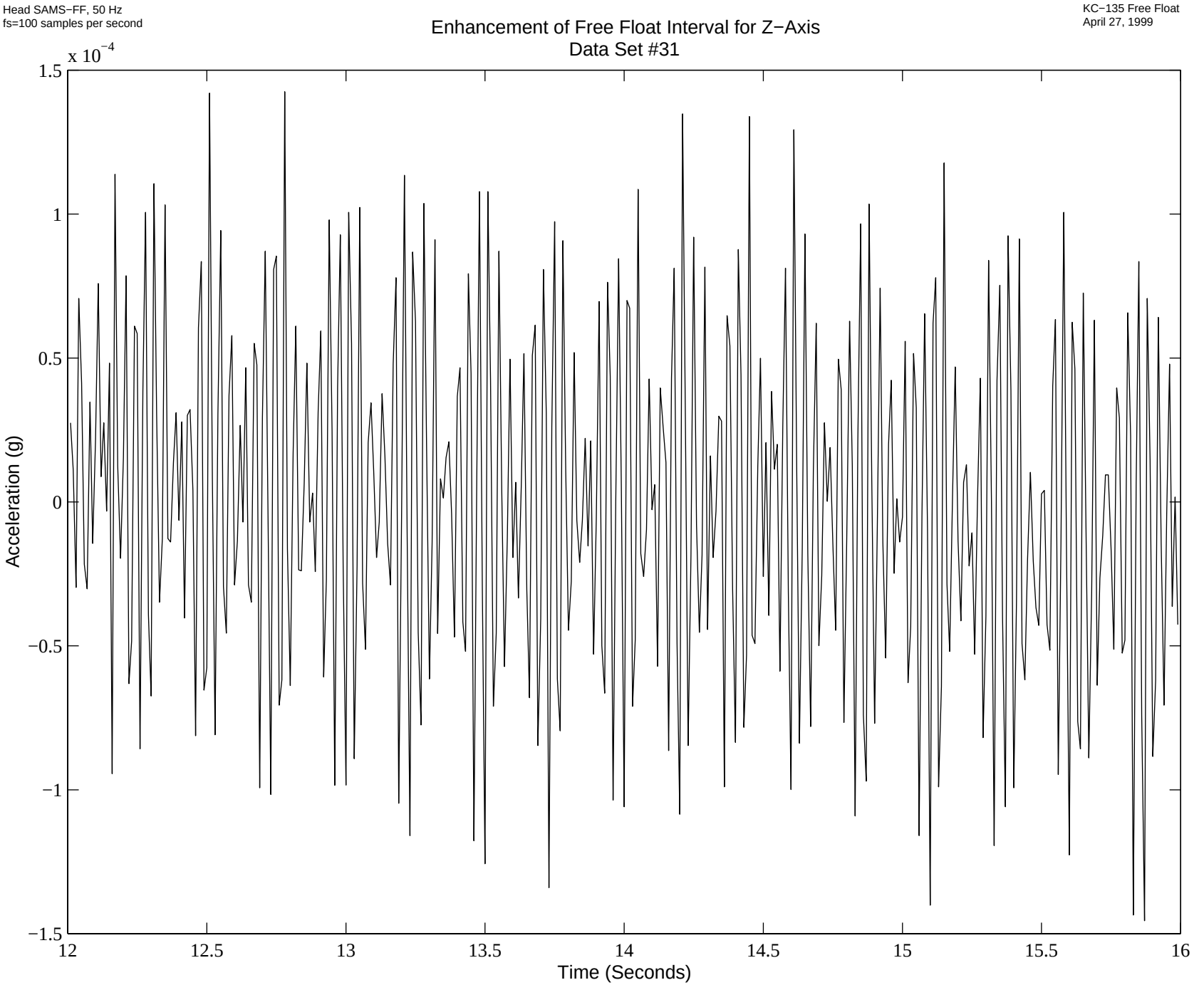


Figure 8−7: Enhancement of the Free Float Period for the Z−Axis

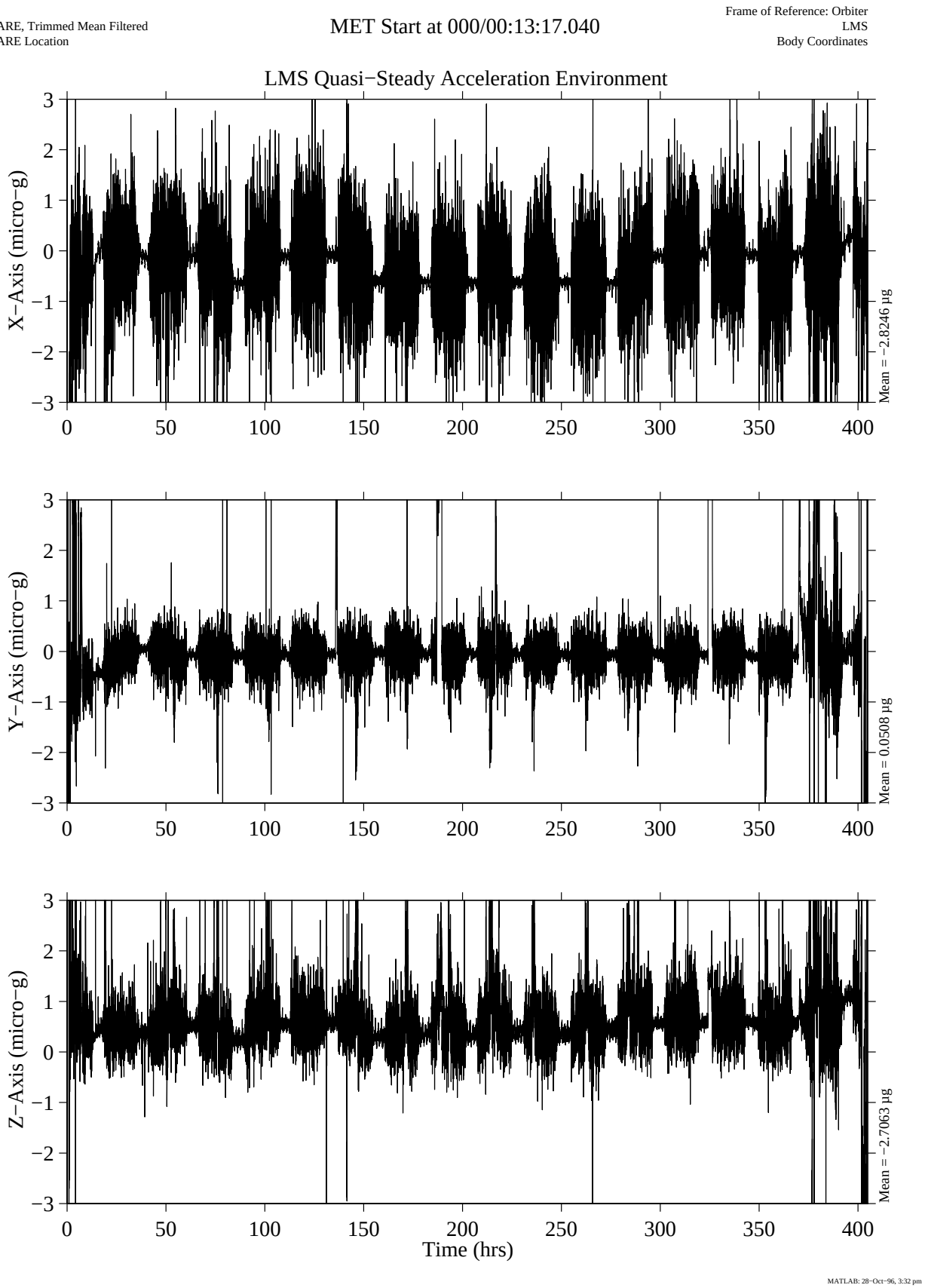

OARE, Trimmed Mean Filtered
OARE Location
MET Start at 000/00:13:17.040
Frame of Reference: Orbiter
LMS
Body Coordinates
LMS Quasi−Steady Acceleration Environment
X−Axis (micro−g)
Mean = −2.8246 µg
Y−Axis (micro−g)
Mean = 0.0508 µg
Z−Axis (micro−g)
Mean = −2.7063 µg
Time (hrs)
MATLAB: 28−Oct−96, 3:32 pm

Figure 9-1

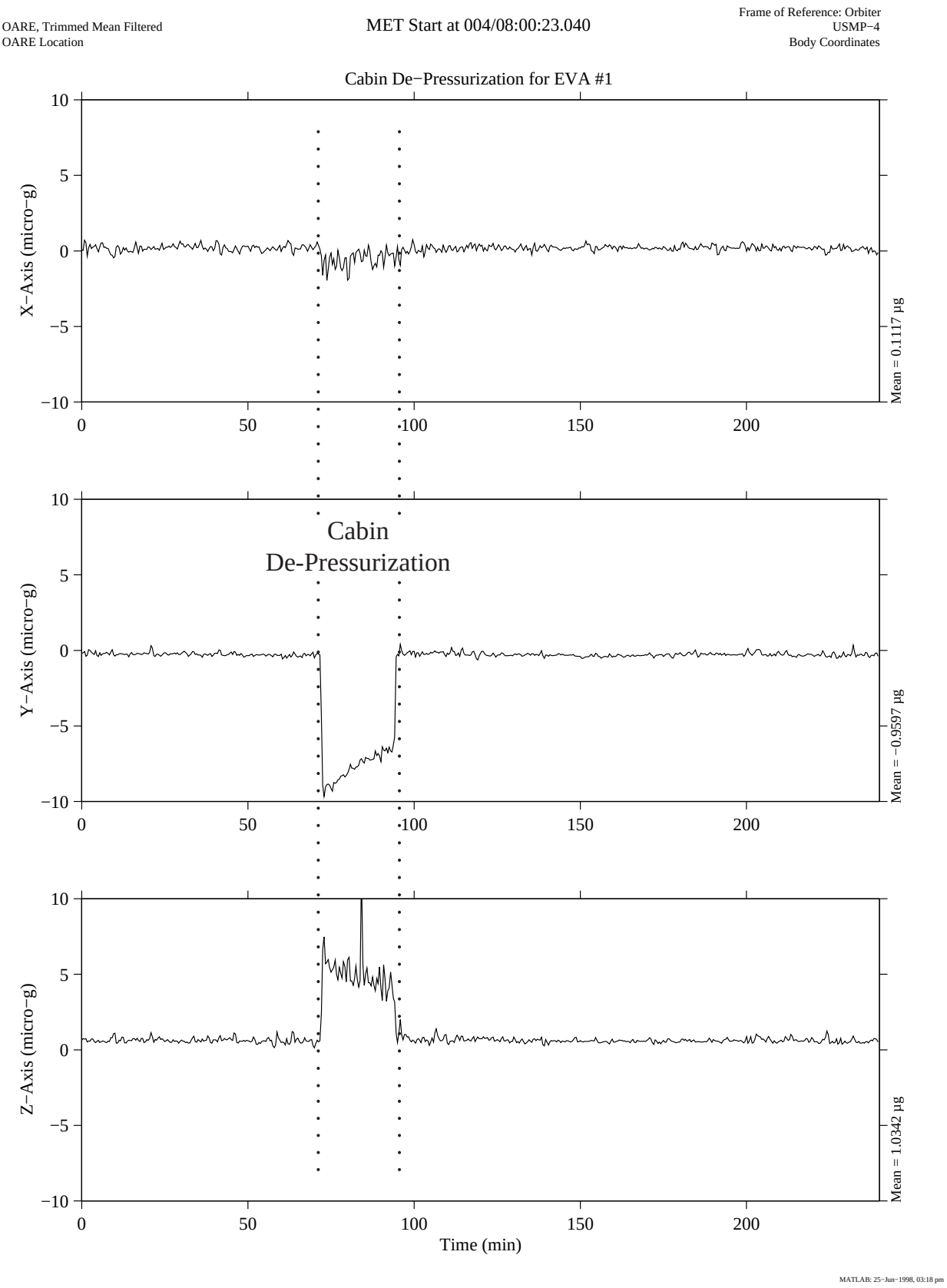

OARE, Trimmed Mean Filtered
OARE Location
MET Start at 004/08:00:23.040
Frame of Reference: Orbiter
USMP−4
Body Coordinates
Cabin De−Pressurization for EVA #1
X−Axis (micro−g)
Mean = 0.1117 µg
Cabin
De-Pressurization
Y−Axis (micro−g)
Mean = −0.9597 µg
Z−Axis (micro−g)
Mean = 1.0342 µg
Time (min)
MATLAB: 25−Jun−1998, 03:18 pm

Figure 9-2

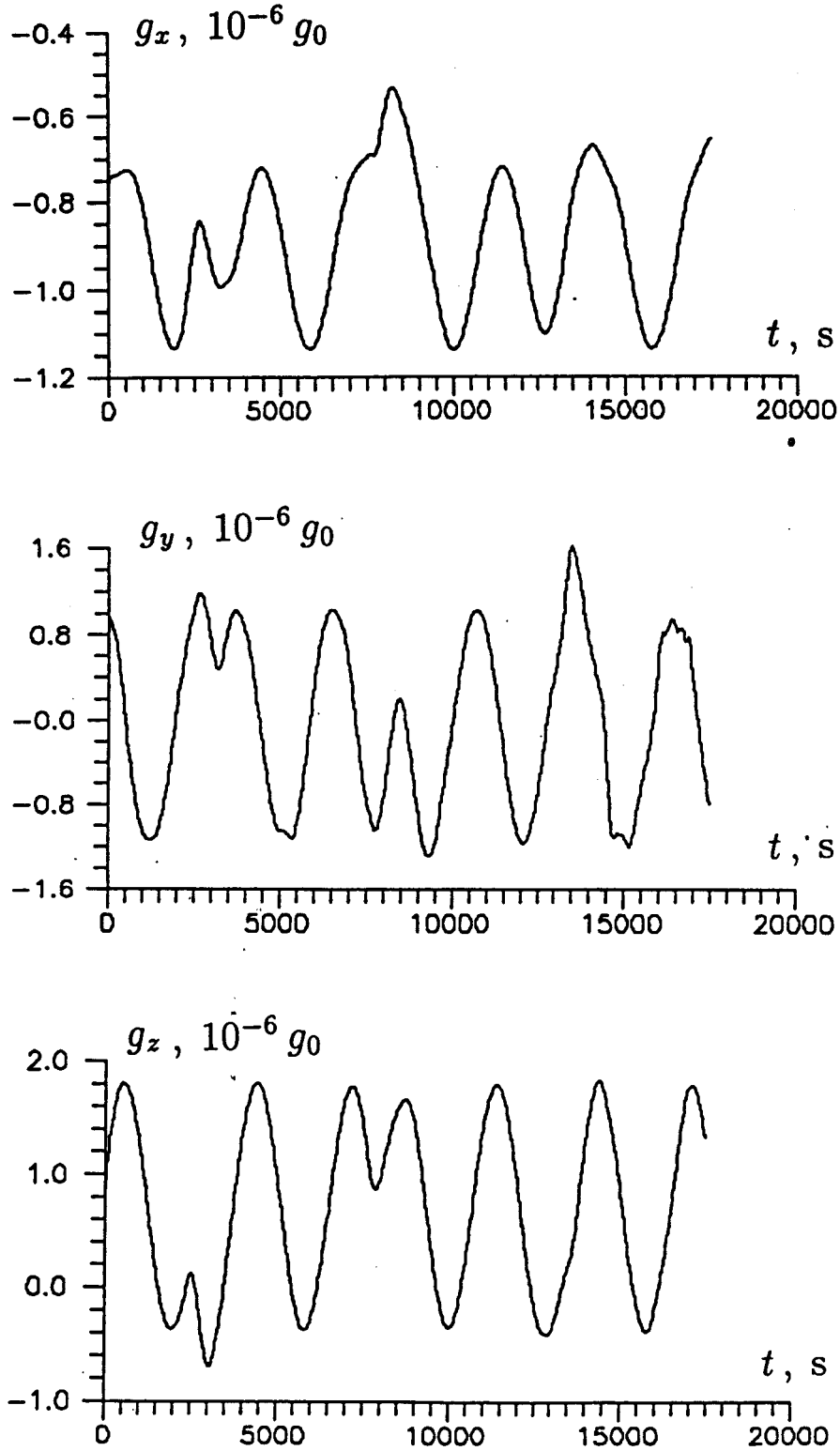

g_x , $10^{-6}\,g_0$
−0.4
−0.6
−0.8
−1.0
−1.2
t , s
0
5000
10000
15000
20000
g_y , $10^{-6}\,g_0$
1.6
0.8
−0.0
−0.8
−1.6
t , s
0
5000
10000
15000
20000
g_z , $10^{-6}\,g_0$
2.0
1.0
0.0
−1.0
t , s
0
5000
10000
15000
20000

Figure 9-3

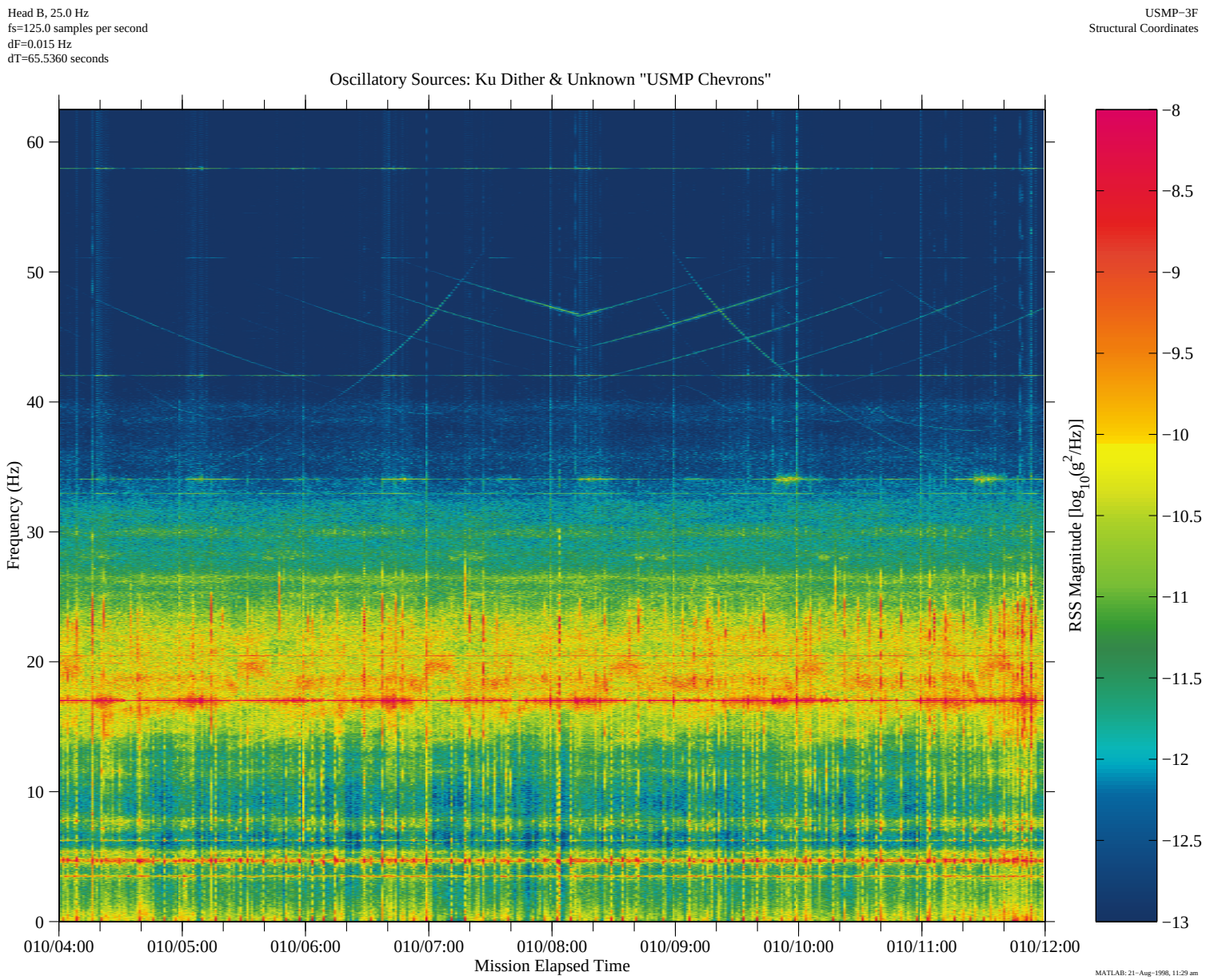

Head B, 25.0 Hz
fs=125.0 samples per second
dF=0.015 Hz
dT=65.5360 seconds
USMP−3F
Structural Coordinates
Oscillatory Sources: Ku Dither & Unknown "USMP Chevrons"
Frequency (Hz)
0
10
20
30
40
50
60
010/04:00
010/05:00
010/06:00
010/07:00
010/08:00
010/09:00
010/10:00
010/11:00
010/12:00
Mission Elapsed Time
RSS Magnitude [log10(g2/Hz)]
−8
−8.5
−9
−9.5
−10
−10.5
−11
−11.5
−12
−12.5
−13
MATLAB: 21−Aug−1998, 11:29 am

Figure 9-4

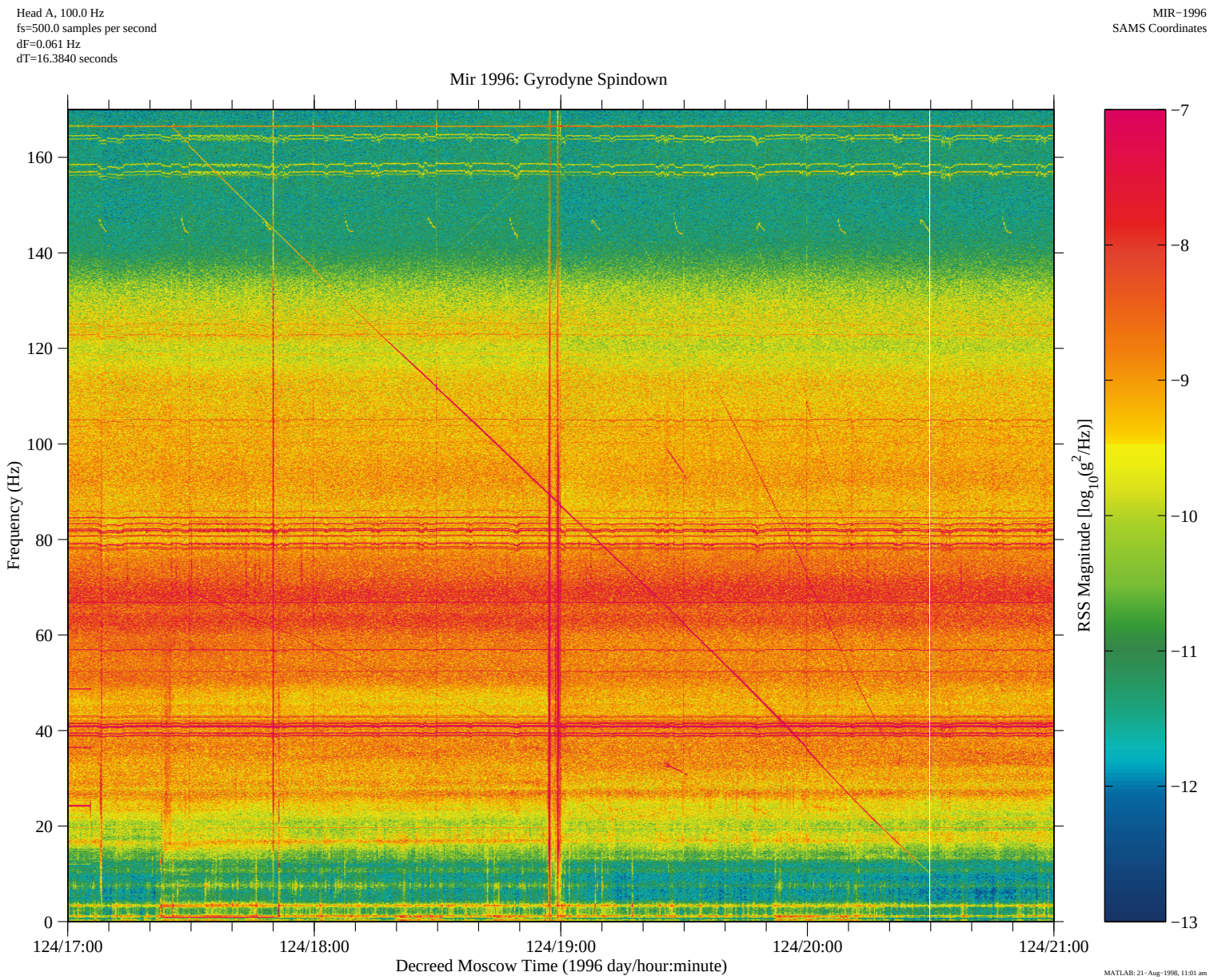

Head A, 100.0 Hz
fs=500.0 samples per second
dF=0.061 Hz
dT=16.3840 seconds
MIR−1996
SAMS Coordinates
Mir 1996: Gyrodyne Spindown
Frequency (Hz)
0
20
40
60
80
100
120
140
160
124/17:00
124/18:00
124/19:00
124/20:00
124/21:00
Decreed Moscow Time (1996 day/hour:minute)
RSS Magnitude [log10(g2/Hz)]
−7
−8
−9
−10
−11
−12
−13
MATLAB: 21−Aug−1998, 11:01 am

Figure 9-5

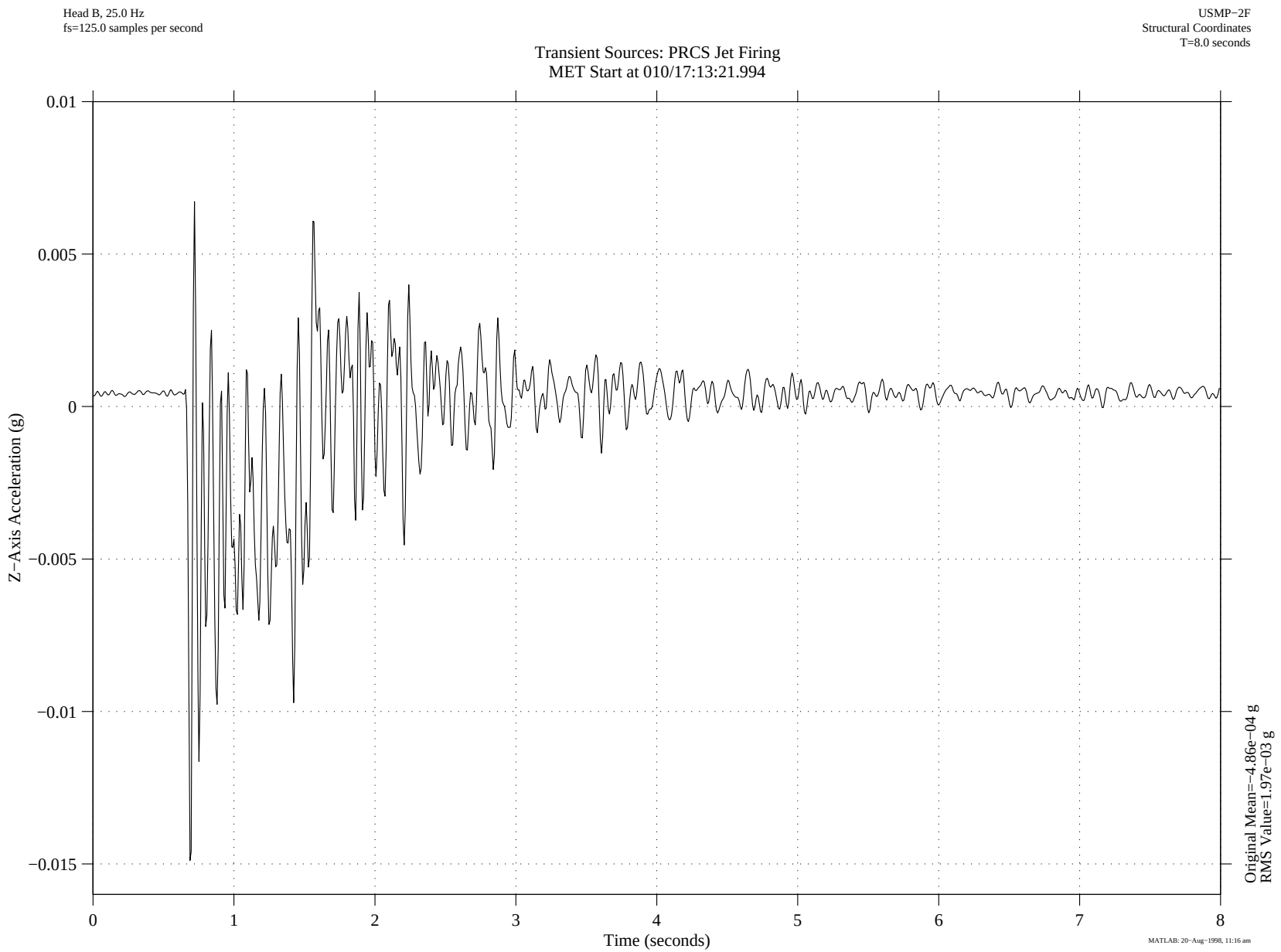

Head B, 25.0 Hz
fs=125.0 samples per second
USMP−2F
Structural Coordinates
T=8.0 seconds
Transient Sources: PRCS Jet Firing
MET Start at 010/17:13:21.994
0.01
0.005
0
−0.005
−0.01
−0.015
Z−Axis Acceleration (g)
0
1
2
3
4
5
6
7
8
Time (seconds)
Original Mean=−4.86e−04 g
RMS Value=1.97e−03 g
MATLAB: 20−Aug−1998, 11:16 am

Figure 9-6

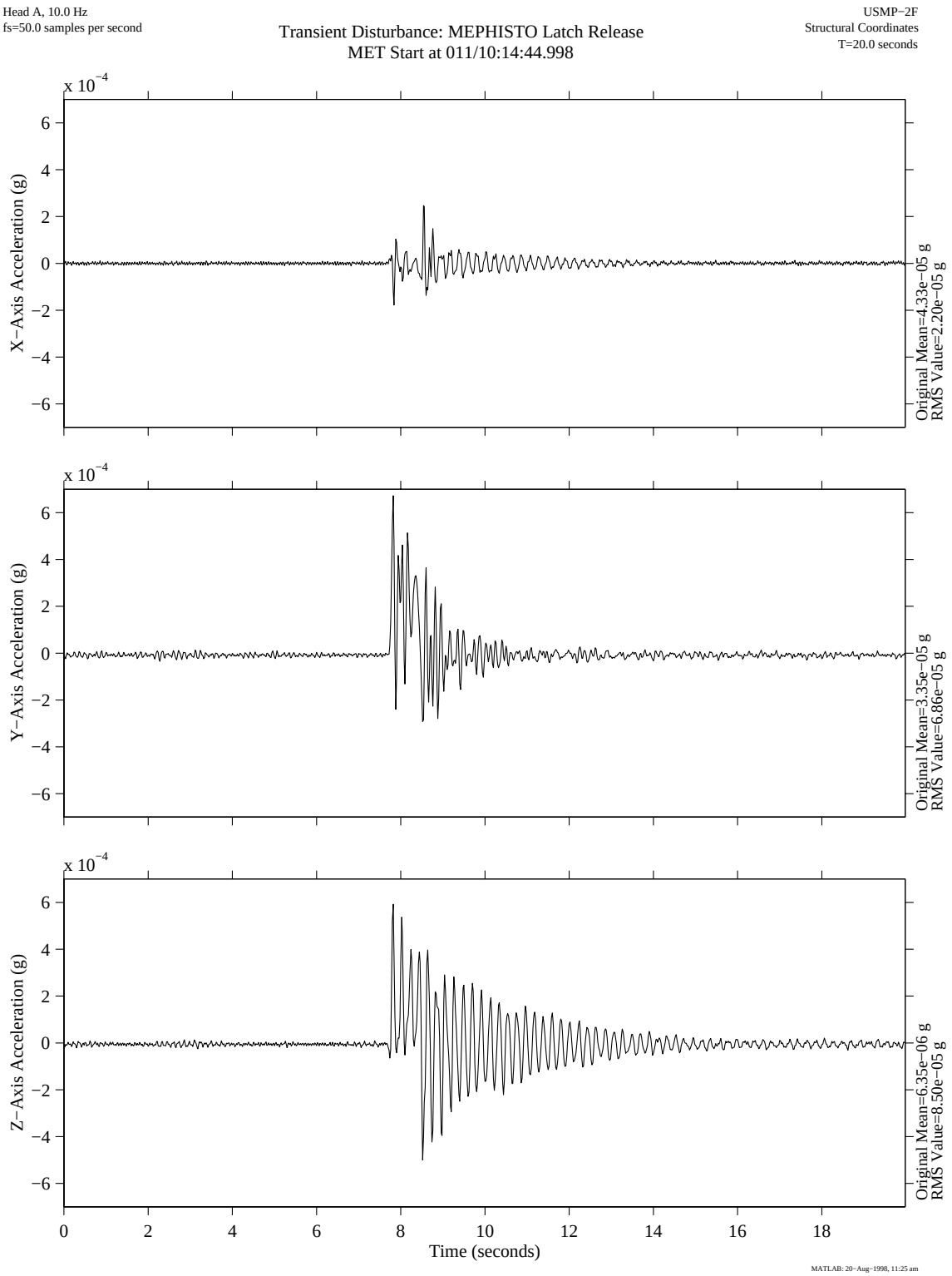

Head A, 10.0 Hz
fs=50.0 samples per second
Transient Disturbance: MEPHISTO Latch Release
MET Start at 011/10:14:44.998
USMP−2F
Structural Coordinates
T=20.0 seconds
x 10−4
X−Axis Acceleration (g)
Original Mean=4.33e−05 g
RMS Value=2.20e−05 g
Y−Axis Acceleration (g)
Original Mean=3.35e−05 g
RMS Value=6.86e−05 g
Z−Axis Acceleration (g)
Original Mean=6.35e−06 g
RMS Value=8.50e−05 g
Time (seconds)
MATLAB: 20−Aug−1998, 11:25 am

Figure 9-7

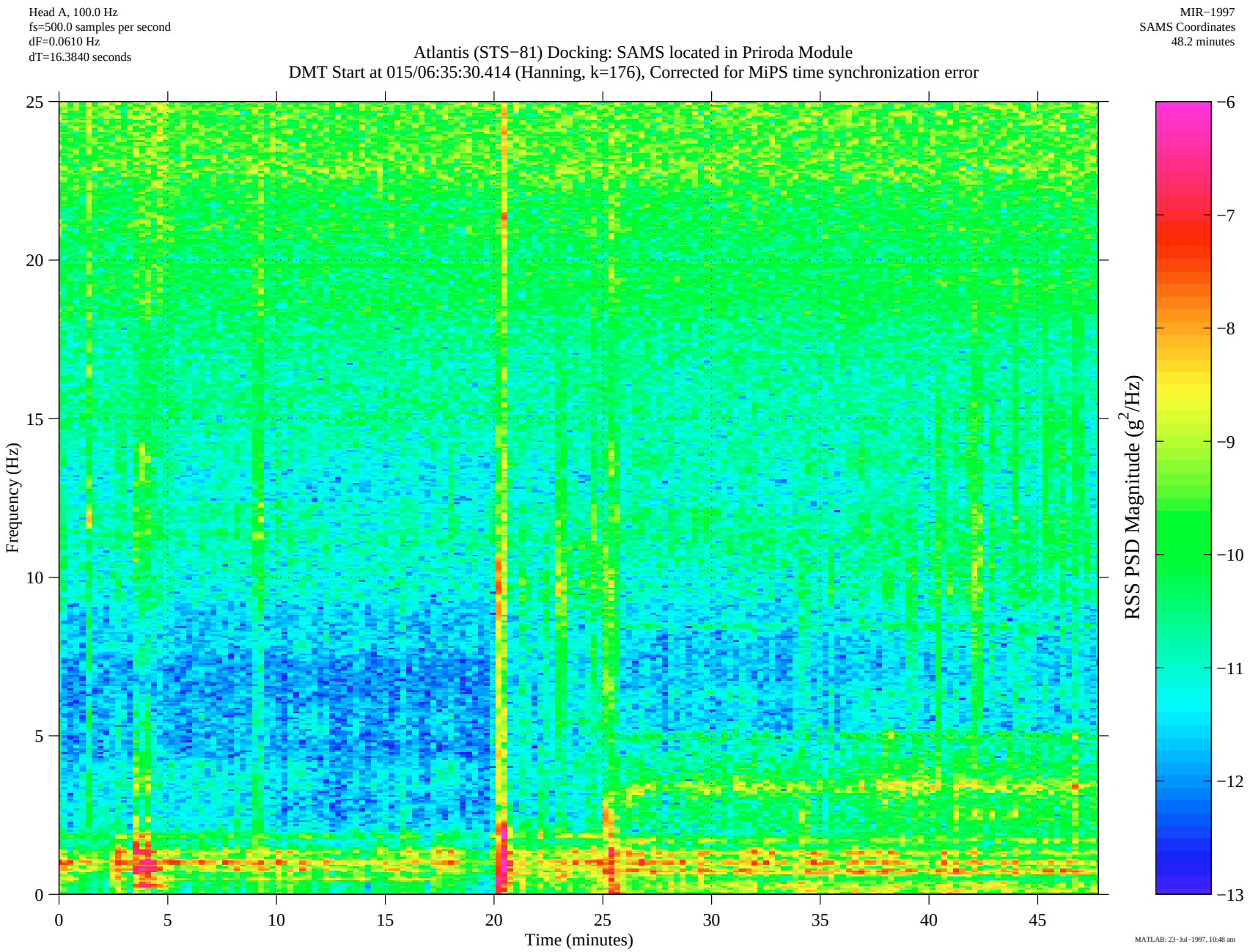

Head A, 100.0 Hz
fs=500.0 samples per second
dF=0.0610 Hz
dT=16.3840 seconds
MIR−1997
SAMS Coordinates
48.2 minutes
Atlantis (STS−81) Docking: SAMS located in Priroda Module
DMT Start at 015/06:35:30.414 (Hanning, k=176), Corrected for MiPS time synchronization error
Frequency (Hz)
Time (minutes)
RSS PSD Magnitude (g2/Hz)
MATLAB: 23−Jul−1997, 10:48 am

Figure 9-8

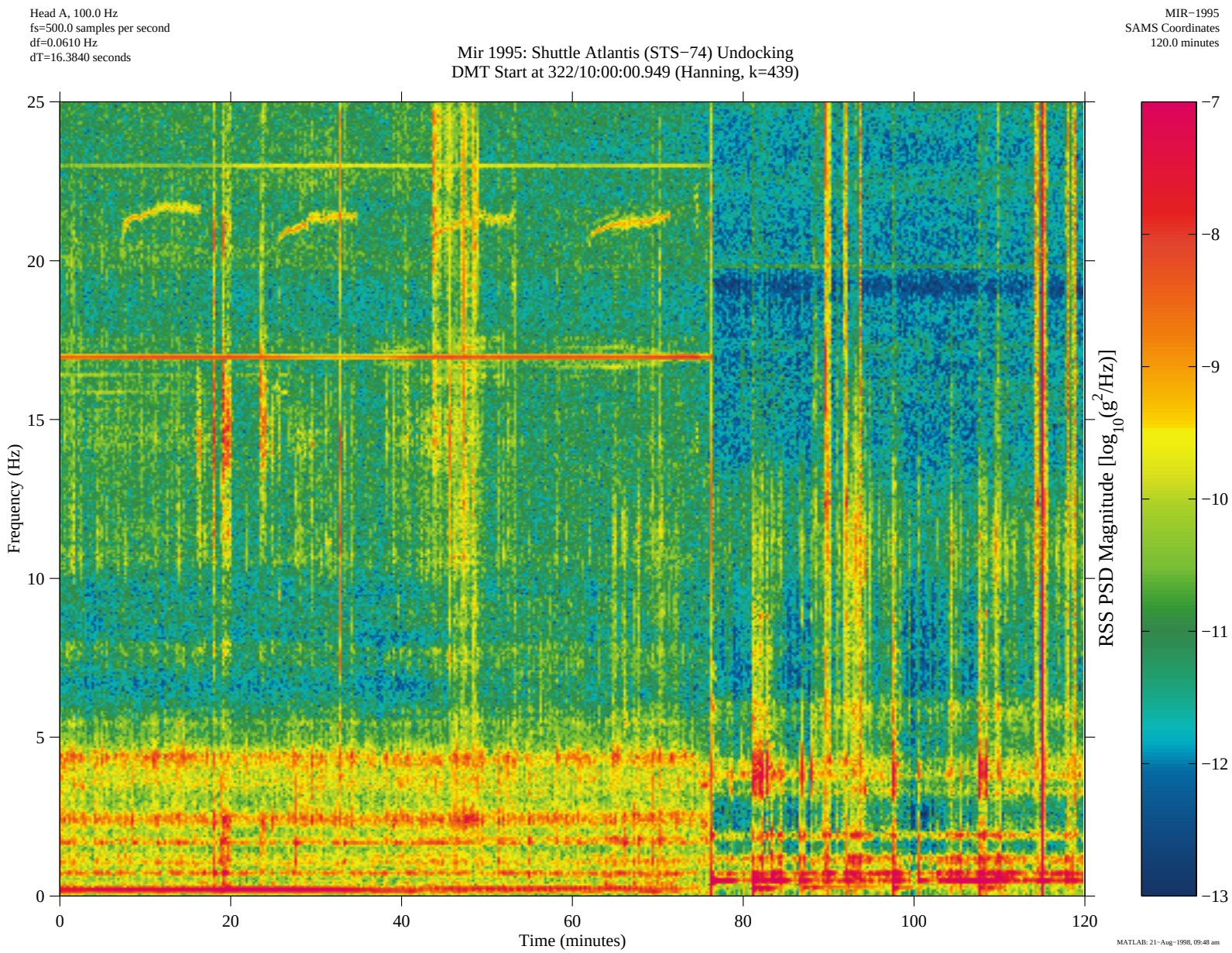
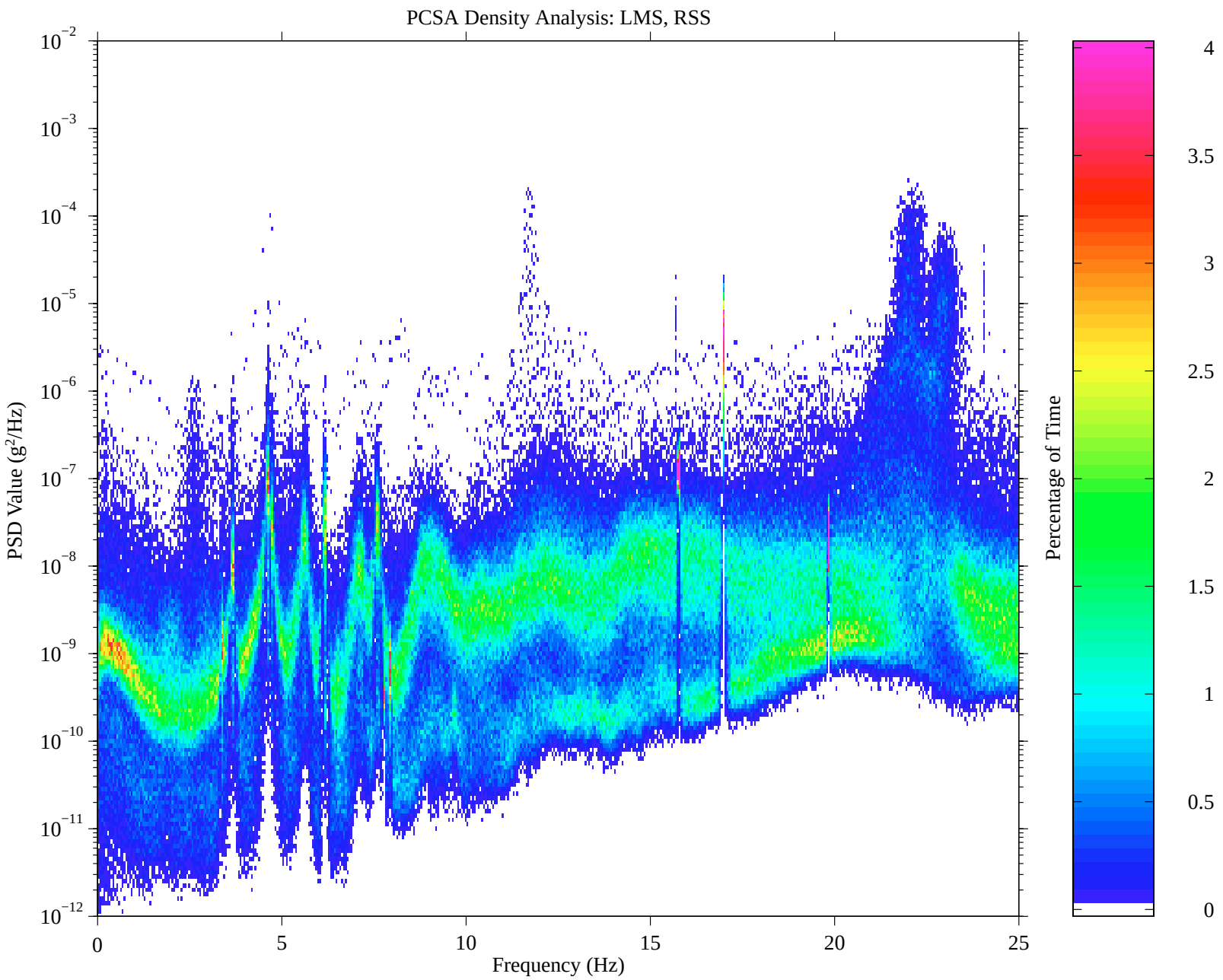
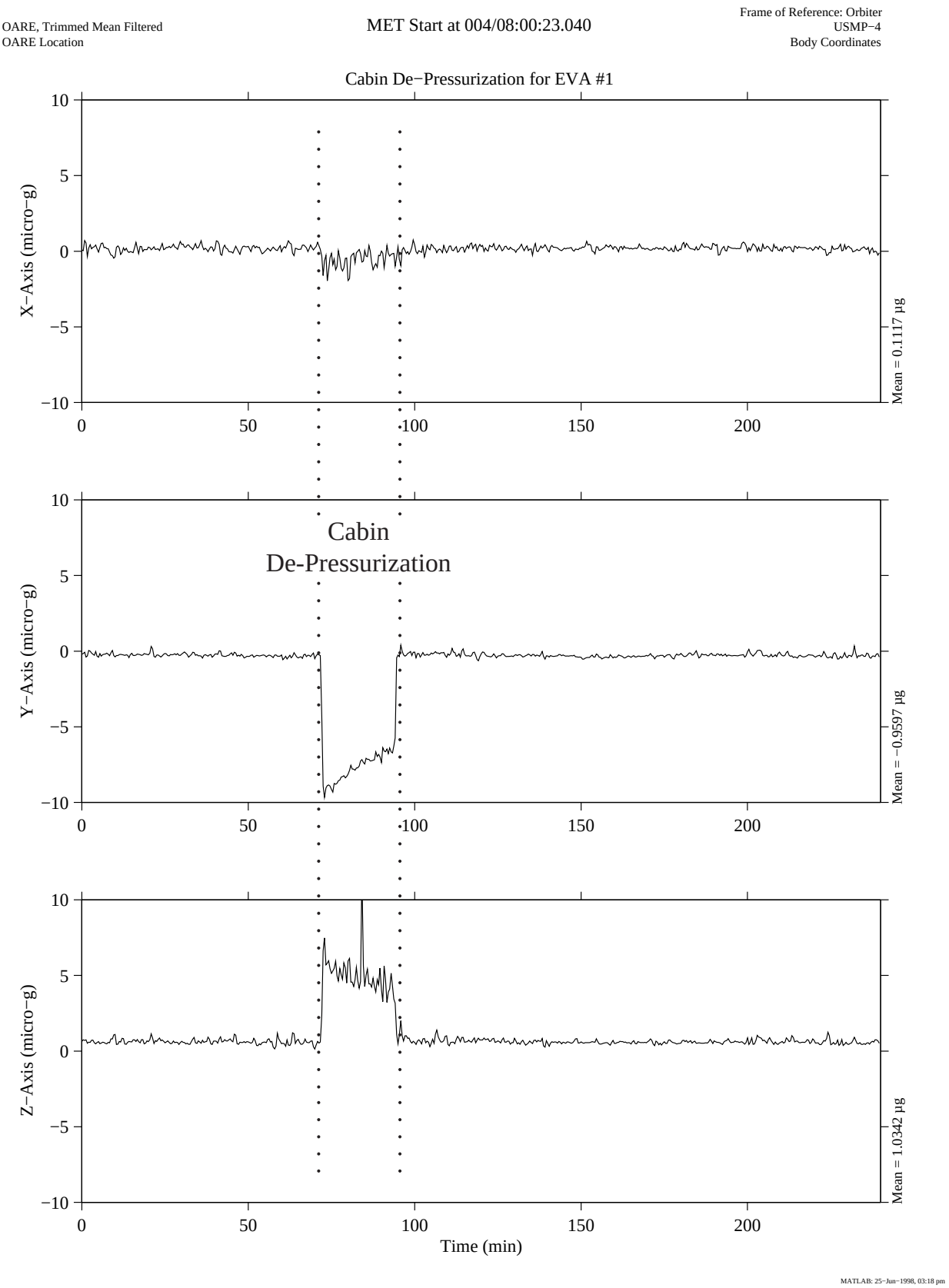

Head A, 100.0 Hz
fs=500.0 samples per second
df=0.0610 Hz
dT=16.3840 seconds
MIR−1995
SAMS Coordinates
120.0 minutes
Mir 1995: Shuttle Atlantis (STS−74) Undocking
DMT Start at 322/10:00:00.949 (Hanning, k=439)
Frequency (Hz)
Time (minutes)
RSS PSD Magnitude [log10(g2/Hz)]
MATLAB: 21−Aug−1998, 09:48 am

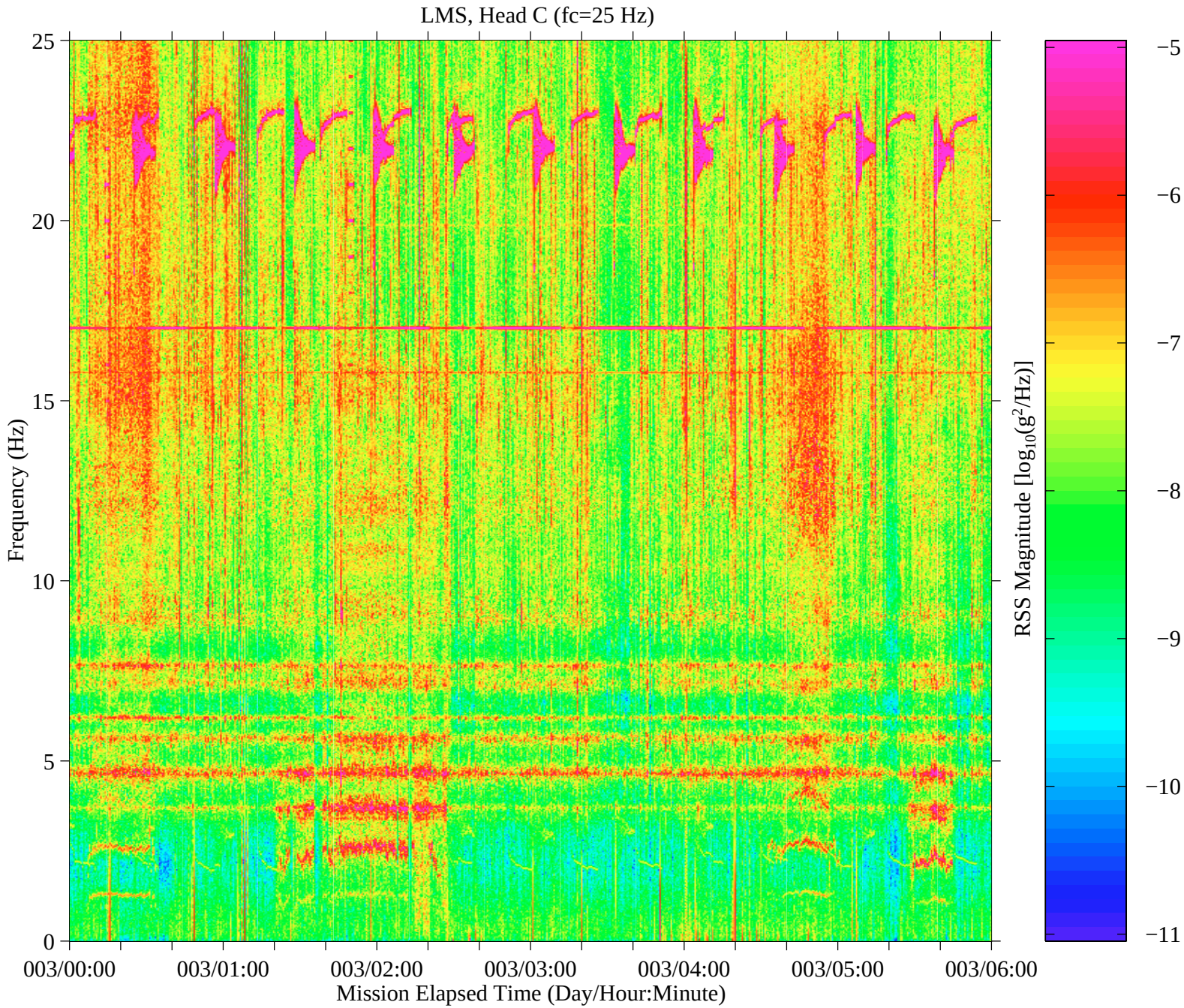
Figure 9-9



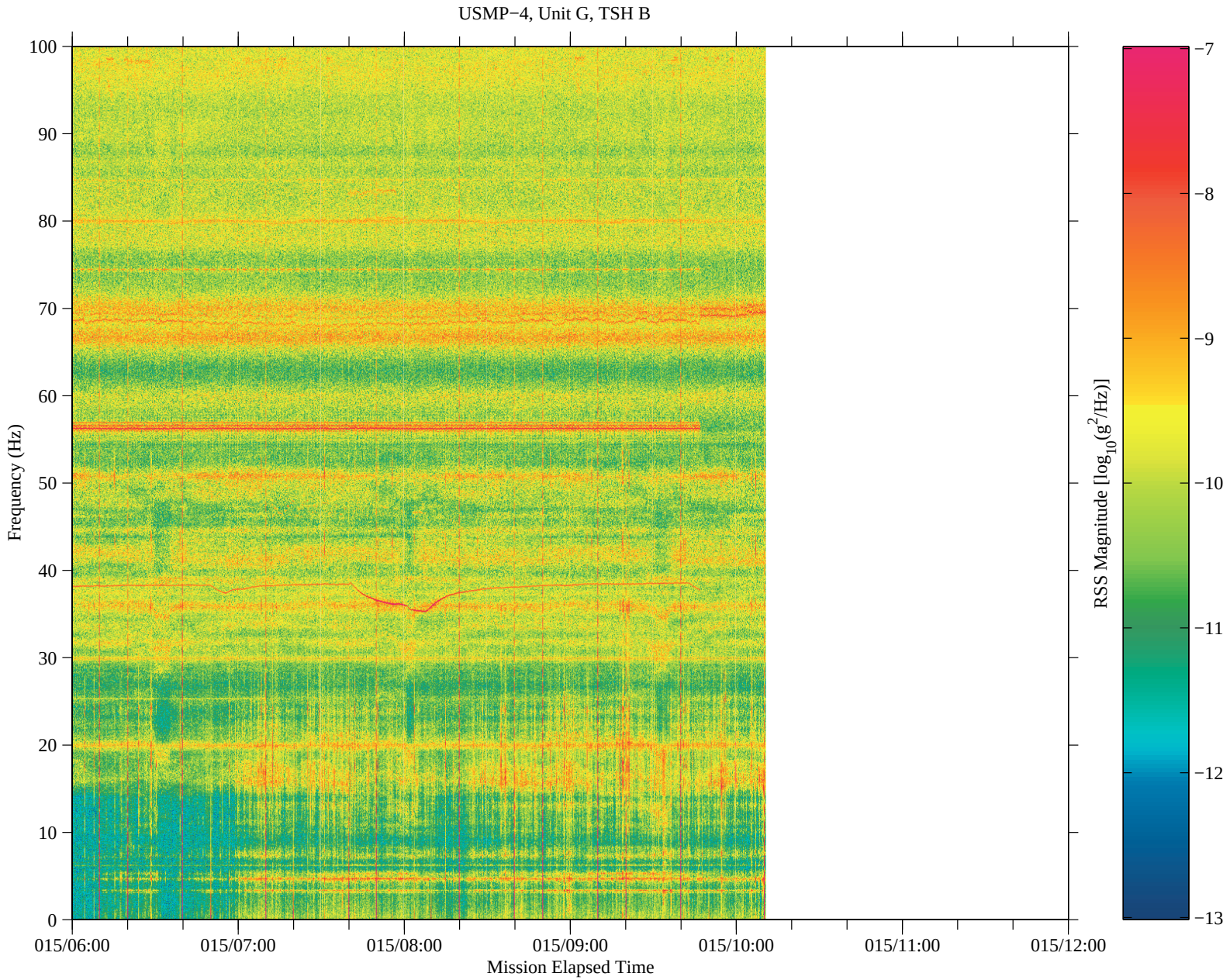
MEIT 1999 Figure 12-1: IDGE Experiment Turn Off from STS-87 Mission (USMP-4)



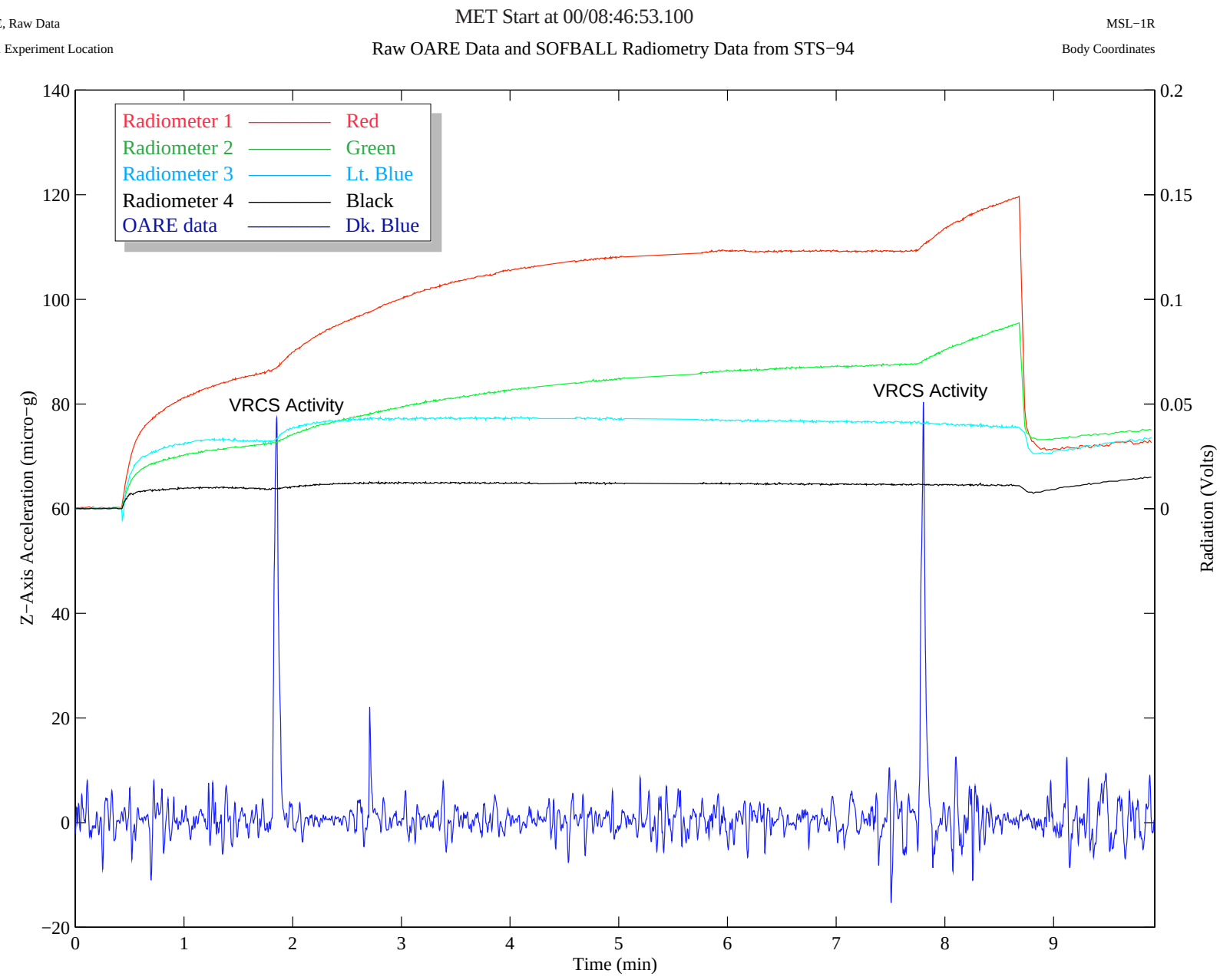
MEIT 1999 Figure 12-2: Cabin De-Pressurization from STS-87 Mission (USMP-4)



MEIT 1999 Figure 12-3: Nominal Microgravity Environment from STS-78 (LMS)



MEIT 1999 Figure 12-4: Raw OARE Data and SOFBALL Radiometry Data from STS-94 Mission (MSL-1R)



MEIT 1999 Figure 12-5: Principal Componet Spectral Analysis for the Entire STS-78 Mission (LMS)