Section 14:

How to Access PIMS ISS Acceleration Data

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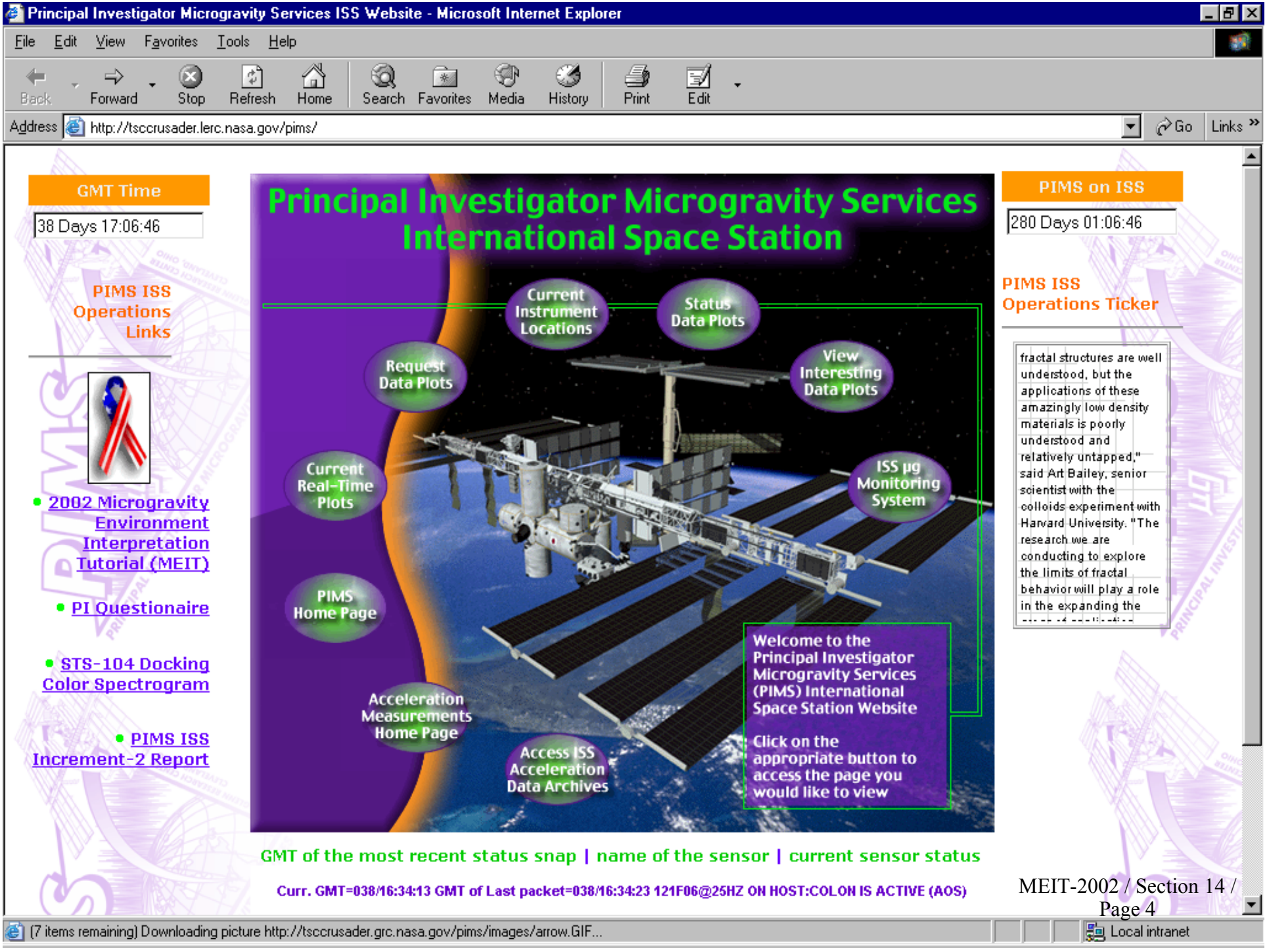
PIMS Project Manager
NASA Glenn Research Center

Outline

- **Ancillary PIMS ISS Web Page Functions**
  - **PIMS ISS Operations Links**
  - **PIMS ISS Operations Ticker**
  - **PIMS Sensor Status Bar**
- **Main PIMS ISS Web Page Functions**
  - **Acceleration Measurement Home Page**
  - **PIMS Home Page**
  - **Current Real Time Plots**
  - **Current Instrument Locations**
  - **Access ISS Acceleration Data Archives**
  - **View Interesting Data Plots**
  - **ISS Monitoring System**
  - **Request Data Plots**
  - **Status Data Plots**

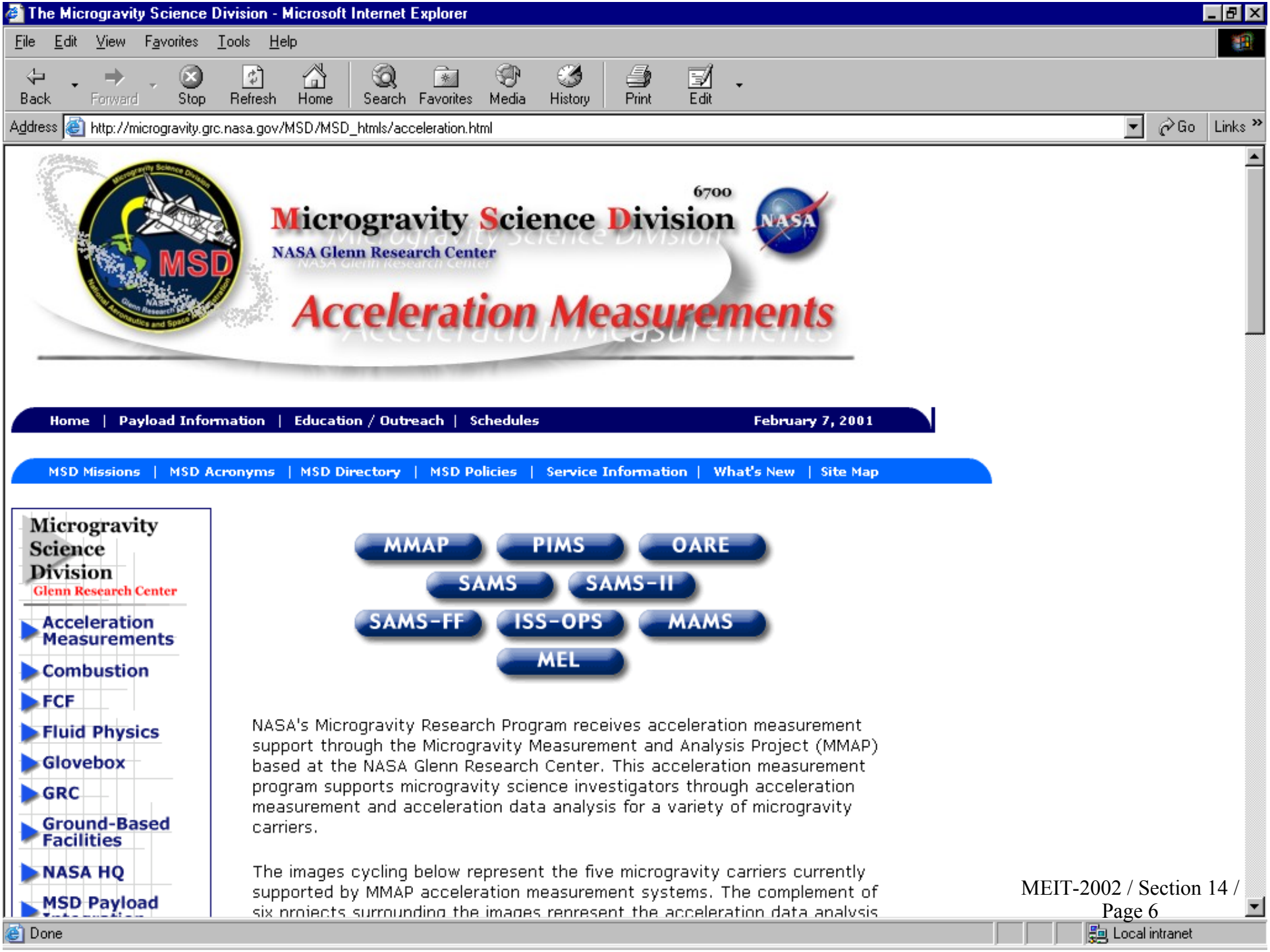
Ancillary PIMS ISS Web Page Functions

- **PIMS ISS Operations Links**
  - **Provides current GMT timestamp**
  - **Provides links to latest PIMS data and important information**
    - Tutorial information
    - Increment reports
    - Specialized analysis
    - PI questionnaire
- **PIMS ISS Operations Ticker**
  - **Provides current ISS status information**
- **PIMS Sensor Status Bar**
  - **Provides description of current acceleration data measurement activity**
  - **Provides current GMT, last data packet received time, AOS/LOS indication and sensor sampling rate**


Principal Investigator Microgravity Services ISS Website - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Forward Stop Refresh Home Search Favorites Media History Print Edit
Address http://tsccrusader.lerc.nasa.gov/pims/
Go Links
GMT Time
38 Days 17:06:46
PIMS ISS Operations Links
2002 Microgravity Environment Interpretation Tutorial (MEIT)
PI Questionaire
STS-104 Docking Color Spectrogram
PIMS ISS Increment-2 Report
Principal Investigator Microgravity Services International Space Station
Current Instrument Locations
Status Data Plots
Request Data Plots
View Interesting Data Plots
Current Real-Time Plots
ISS µg Monitoring System
PIMS Home Page
Acceleration Measurements Home Page
Access ISS Acceleration Data Archives
Welcome to the Principal Investigator Microgravity Services (PIMS) International Space Station Website
Click on the appropriate button to access the page you would like to view
PIMS on ISS
280 Days 01:06:46
PIMS ISS Operations Ticker
fractal structures are well understood, but the applications of these amazingly low density materials is poorly understood and relatively untapped," said Art Bailey, senior scientist with the colloids experiment with Harvard University. "The research we are conducting to explore the limits of fractal behavior will play a role in the expanding the
GMT of the most recent status snap | name of the sensor | current sensor status
Curr. GMT=038/16:34:13 GMT of Last packet=038/16:34:23 121F06@25HZ ON HOST:COLON IS ACTIVE (AOS)
(7 items remaining) Downloading picture http://tsccrusader.grc.nasa.gov/pims/images/arrow.GIF...
Local intranet

Main PIMS Web Page Functions

- **Acceleration Measurement Home Page**
  - **Provides links to the various acceleration measurement systems supported by the Microgravity Environment Program**
- **Principal Investigator Microgravity Services Home Page**
  - **Provides link to electronic copy of the PIMS brochure**
  - **Provides link to PIMS-ISS-001 document which describes the capabilities of the PIMS ISS software systems**
  - **Provides links to various other PIMS products and services**


The Microgravity Science Division - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Forward Stop Refresh Home Search Favorites Media History Print Edit
Address http://microgravity.grc.nasa.gov/MSD/MSD_htmls/acceleration.html
Go Links
6700
Microgravity Science Division
NASA Glenn Research Center
Acceleration Measurements
Home | Payload Information | Education / Outreach | Schedules February 7, 2001
MSD Missions | MSD Acronyms | MSD Directory | MSD Policies | Service Information | What's New | Site Map
Microgravity Science Division
Glenn Research Center
Acceleration Measurements
Combustion
FCF
Fluid Physics
Glovebox
GRC
Ground-Based Facilities
NASA HQ
MSD Payload
MMAP
PIMS
OARE
SAMS
SAMS-II
SAMS-FF
ISS-OPS
MAMS
MEL
NASA's Microgravity Research Program receives acceleration measurement support through the Microgravity Measurement and Analysis Project (MMAP) based at the NASA Glenn Research Center. This acceleration measurement program supports microgravity science investigators through acceleration measurement and acceleration data analysis for a variety of microgravity carriers.
The images cycling below represent the five microgravity carriers currently supported by MMAP acceleration measurement systems. The complement of six projects surrounding the images represent the acceleration data analysis
Done
Local intranet

Principal Investigators Microgravity Services - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites Media History Print Edit

Address http://microgravity.grc.nasa.gov/MSD/MSD_htmls/PIMS.html Go Links

Microgravity Science Division
Glenn Research Center

Acceleration Measurements

MMAP
PIMS
OARE
SAMS
SAMS-II
SAMS-FF
ISS-OPS
MAMS
MEL

PIMS

PRINCIPAL INVESTIGATOR MICROGRAVITY SERVICES

Principal Investigator Microgravity Services
International Space Station Operations site

Principal Investigators | Products and Support | Outreach | µg Environment | Related Topics

OARE Data, SAMS Data, Mission Summary Reports, Flight History, Special Analysis, Real-Time Data Display, References, ADAPT-TM

Principal Investigatrs Microgravity Services Brochure (PDF version)

PIMS-ISS-001 revA document

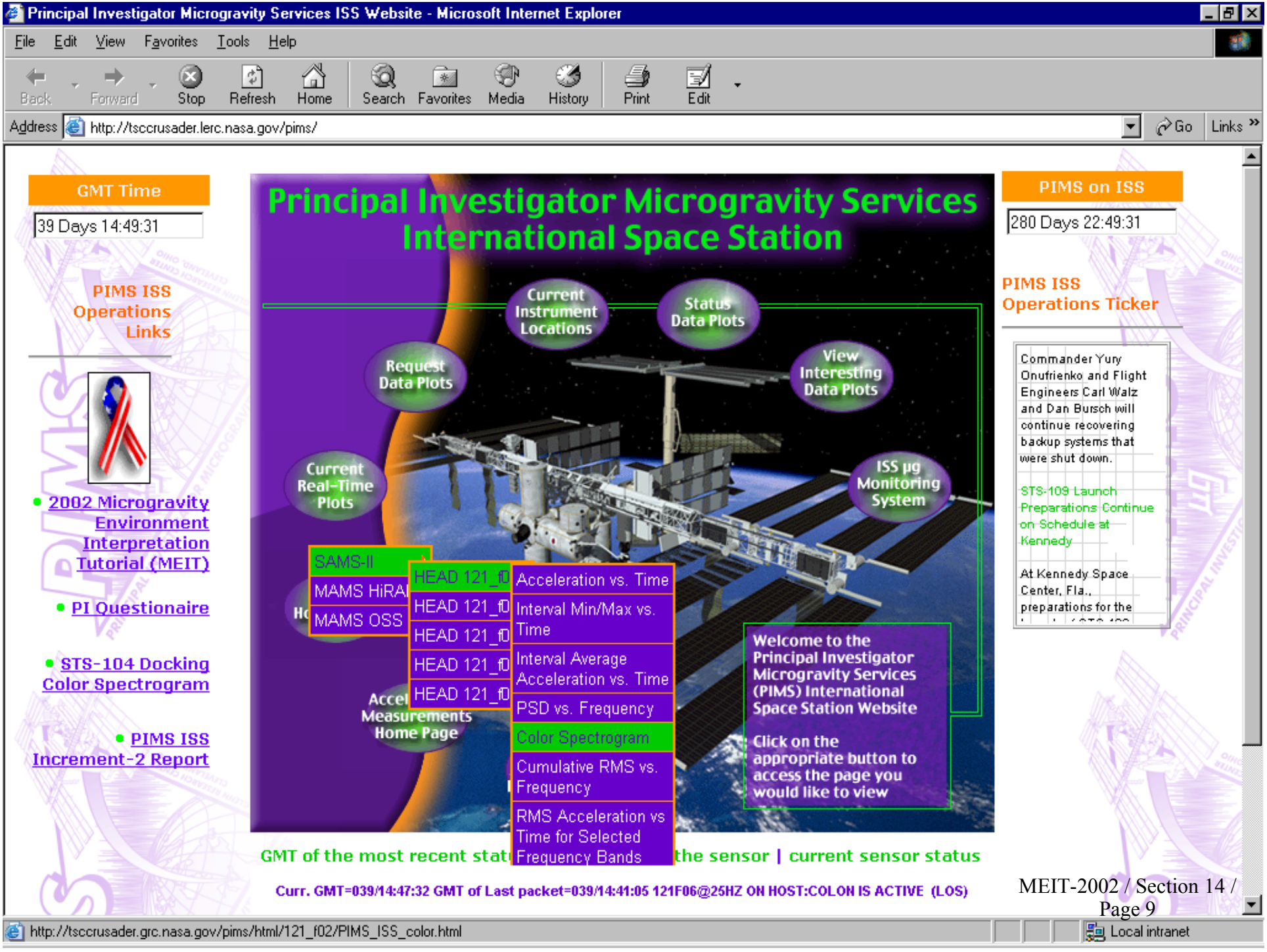
The NASA Lewis Research Center Principal Investigator Microgravity Services (PIMS) project supports microgravity principal investigators' efforts to evaluate acceleration effects on their experiments. PIMS is funded by the NASA Headquarters Office of Life Sciences and Microgravity Applications, Microgravity Research Division (MRD). PIMS' primary responsibility is to support MRD investigators in the area of acceleration data analysis and interpretation. Also, PIMS provides MRD with expertise in the area of microgravity experiment requirements, vibration isolation and the implementation of requirements on different spacecraft.

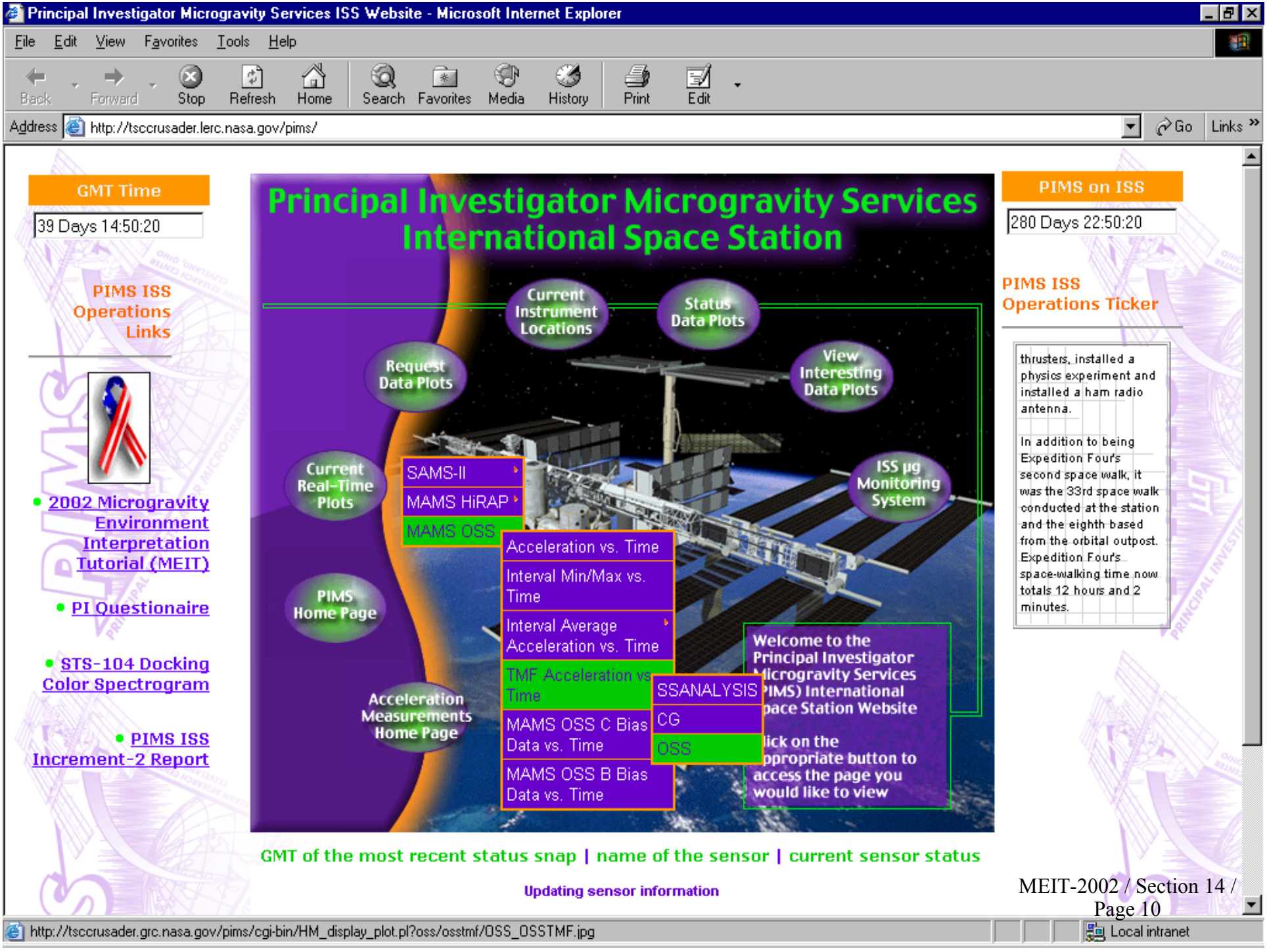
PIMS is part of the Microgravity Measurement and Analysis Project (MMAP) which integrates the PIMS with five other activities focused on the

Error on page. Local intranet

Main PIMS Web Page Functions

- **Current Real Time Plots**
  - **Provides access to real time data plots based on acceleration measurement system, sensor, and plot types**
  - **Mouse over this button to get the acceleration measurement system menu**
  - **Select the sensor from the desired acceleration measurement system**
  - **Select the plot type for the sensor of interest**
  - **If a plot type is not available (not actively being generated by PIMS real time software), a message is displayed to contact PIMS if that plot type is desired**


Principal Investigator Microgravity Services ISS Website - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Forward Stop Refresh Home Search Favorites Media History Print Edit
Address http://tsccrusader.lerc.nasa.gov/pims/
Go Links
GMT Time
39 Days 14:49:31
PIMS ISS Operations Links
2002 Microgravity Environment Interpretation Tutorial (MEIT)
PI Questionaire
STS-104 Docking Color Spectrogram
PIMS ISS Increment-2 Report
Principal Investigator Microgravity Services
International Space Station
Current Instrument Locations
Status Data Plots
Request Data Plots
View Interesting Data Plots
Current Real-Time Plots
ISS µg Monitoring System
SAMS-II
MAMS HiRA
MAMS OSS
HEAD 121_f0
HEAD 121_f0
HEAD 121_f0
HEAD 121_f0
HEAD 121_f0
Acceleration vs. Time
Interval Min/Max vs. Time
Interval Average Acceleration vs. Time
PSD vs. Frequency
Color Spectrogram
Cumulative RMS vs. Frequency
RMS Acceleration vs Time for Selected Frequency Bands
Accel Measurements Home Page
Welcome to the Principal Investigator Microgravity Services (PIMS) International Space Station Website
Click on the appropriate button to access the page you would like to view
GMT of the most recent stat
the sensor | current sensor status
Curr. GMT=039/14:47:32 GMT of Last packet=039/14:41:05 121F06@25HZ ON HOST:COLON IS ACTIVE (LOS)
PIMS on ISS
280 Days 22:49:31
PIMS ISS Operations Ticker
Commander Yury Onufrienko and Flight Engineers Carl Walz and Dan Bursch will continue recovering backup systems that were shut down.
STS-109 Launch Preparations Continue on Schedule at Kennedy
At Kennedy Space Center, Fla., preparations for the
http://tsccrusader.grc.nasa.gov/pims/html/121_f02/PIMS_ISS_color.html
Local intranet


Principal Investigator Microgravity Services ISS Website - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Forward Stop Refresh Home Search Favorites Media History Print Edit
Address http://tsccrusader.lerc.nasa.gov/pims/
Go Links
GMT Time
39 Days 14:50:20
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Current Instrument Locations
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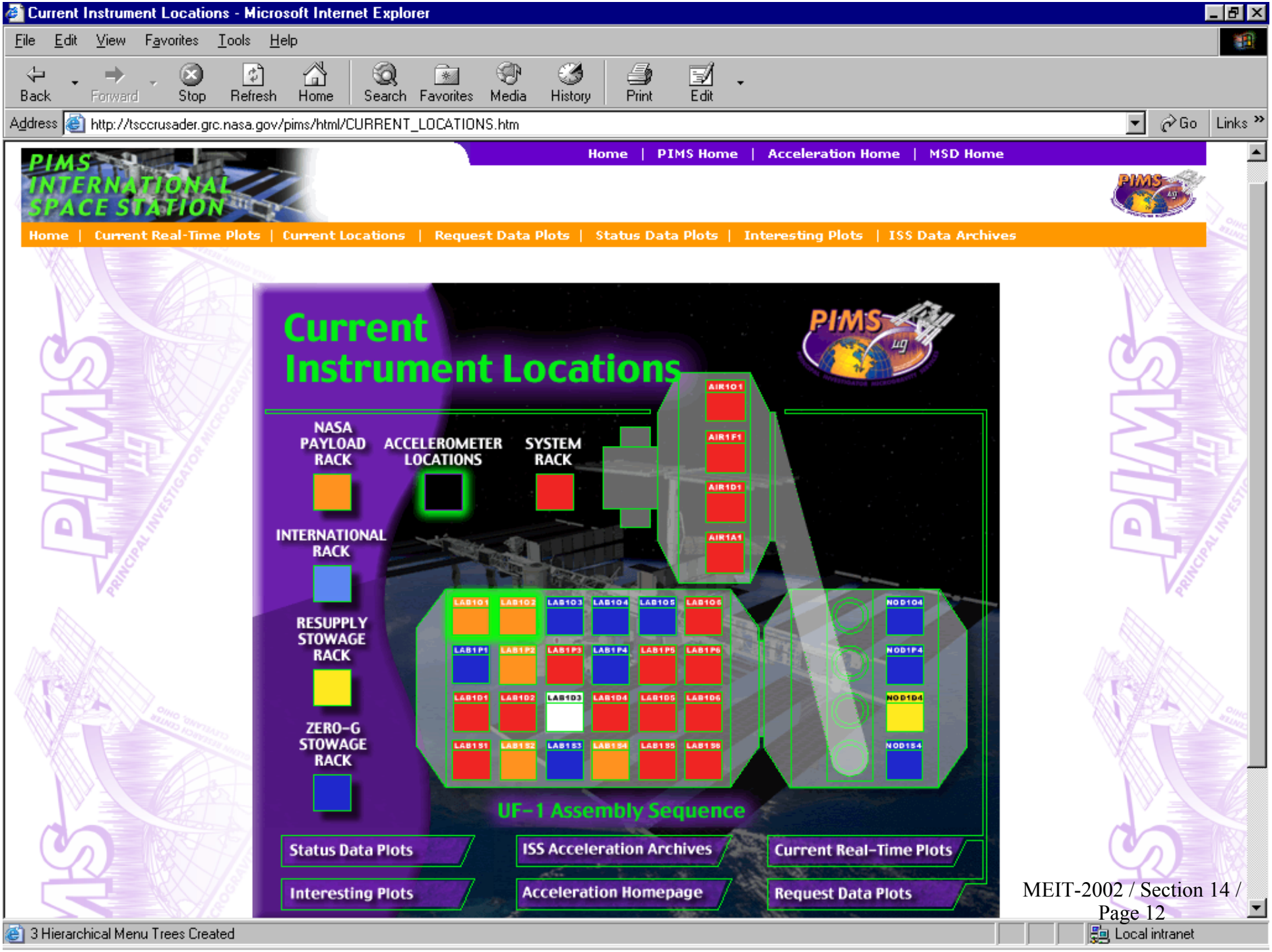
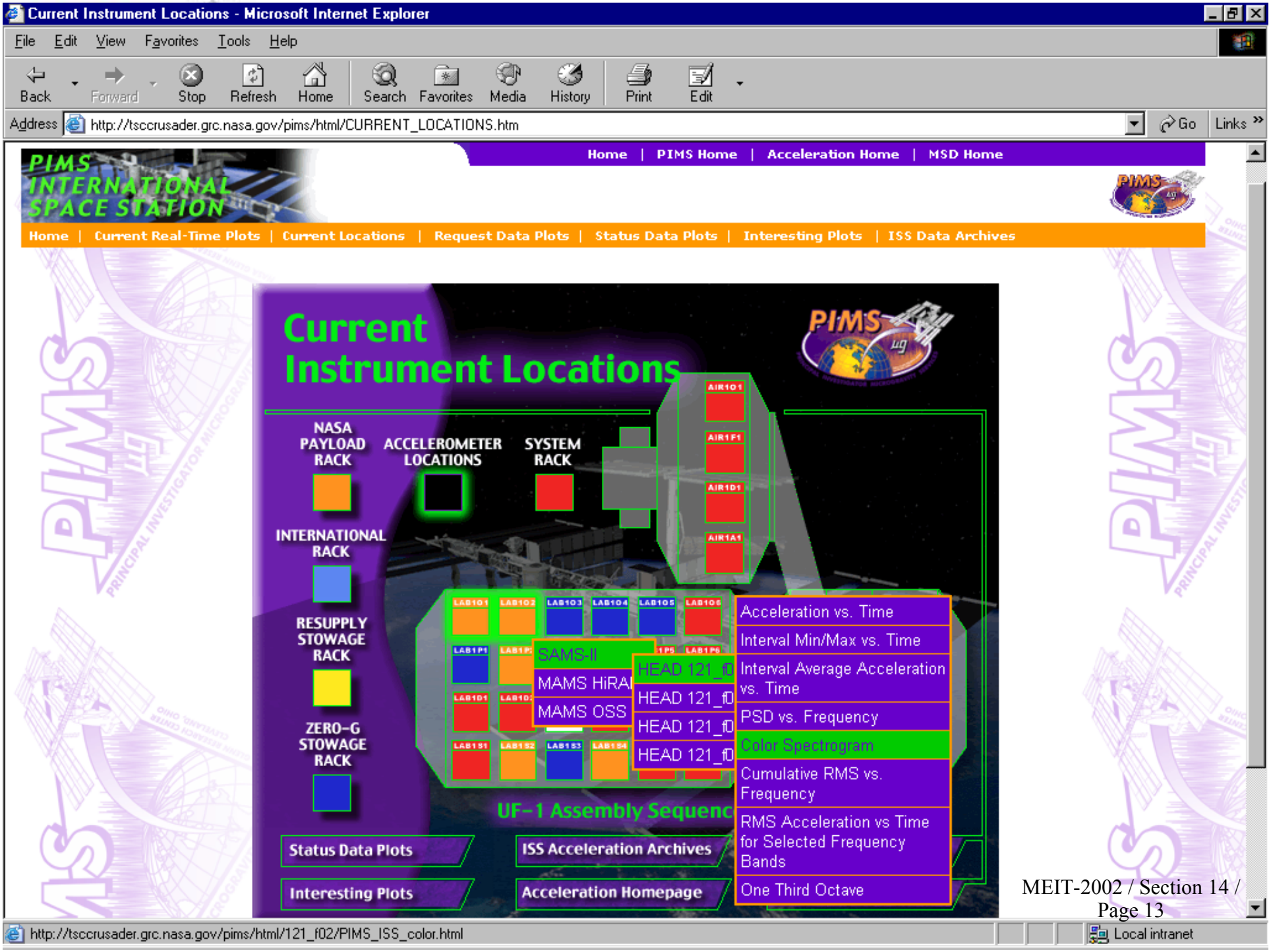
Current Real-Time Plots
ISS µg Monitoring System
SAMS-II
MAMS HiRAP
MAMS OSS
Acceleration vs. Time
Interval Min/Max vs. Time
Interval Average Acceleration vs. Time
TMF Acceleration vs. Time
MAMS OSS C Bias Data vs. Time
MAMS OSS B Bias Data vs. Time
SSANALYSIS
CG
OSS
PIMS Home Page
Acceleration Measurements Home Page
Welcome to the Principal Investigator Microgravity Services (PIMS) International Space Station Website
lick on the ppropriate button to access the page you would like to view
PIMS on ISS
280 Days 22:50:20
PIMS ISS Operations Ticker
thrusters, installed a physics experiment and installed a ham radio antenna.
In addition to being Expedition Four's second space walk, it was the 33rd space walk conducted at the station and the eighth based from the orbital outpost. Expedition Four's space-walking time now totals 12 hours and 2 minutes.
GMT of the most recent status snap | name of the sensor | current sensor status
Updating sensor information
http://tsccrusader.grc.nasa.gov/pims/cgi-bin/HM_display_plot.pl?oss/osstmf/OSS_OSSTMF.jpg
Local intranet

Main PIMS Web Page Functions

- **Current Instrument Locations**
  - **Contains a drawing of the US Lab, designating payload racks, system racks, and stowage racks**
  - **Racks containing acceleration measurement system hardware are ghosted in green**
  - **Mousing over a ghosted rack brings up the same menu selections as for the Current Real Time Plots link**
    - Provides access to real time data plots based on acceleration measurement system, sensor, and plot types
    - Mouse over this button to get the acceleration measurement system menu
    - Select the sensor from the desired acceleration measurement system
    - Select the plot type for the sensor of interest
  - **If a plot type is not available (not actively being generated by PIMS real time software), a message is displayed to contact PIMS if that plot type is desired**


Current Instrument Locations - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Forward Stop Refresh Home Search Favorites Media History Print Edit
Address http://tsccrusader.grc.nasa.gov/pims/html/CURRENT_LOCATIONS.htm
Go Links
PIMS INTERNATIONAL SPACE STATION
Home | PIMS Home | Acceleration Home | MSD Home
Home | Current Real-Time Plots | Current Locations | Request Data Plots | Status Data Plots | Interesting Plots | ISS Data Archives
Current Instrument Locations
NASA PAYLOAD RACK
ACCELEROMETER LOCATIONS
SYSTEM RACK
INTERNATIONAL RACK
RESUPPLY STOWAGE RACK
ZERO-G STOWAGE RACK
AIR1O1
AIR1F1
AIR1D1
AIR1A1
LAB1O1 LAB1O2 LAB1O3 LAB1O4 LAB1O5 LAB1O6
LAB1P1 LAB1P2 LAB1P3 LAB1P4 LAB1P5 LAB1P6
LAB1D1 LAB1D2 LAB1D3 LAB1D4 LAB1D5 LAB1D6
LAB1S1 LAB1S2 LAB1S3 LAB1S4 LAB1S5 LAB1S6
NOD1O4
NOD1P4
NOD1D4
NOD1S4
UF-1 Assembly Sequence
Status Data Plots
ISS Acceleration Archives
Current Real-Time Plots
Interesting Plots
Acceleration Homepage
Request Data Plots
3 Hierarchical Menu Trees Created
Local intranet


Current Instrument Locations - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Forward Stop Refresh Home Search Favorites Media History Print Edit
Address http://tsccrusader.grc.nasa.gov/pims/html/CURRENT_LOCATIONS.htm
Go Links
PIMS INTERNATIONAL SPACE STATION
Home | PIMS Home | Acceleration Home | MSD Home
Home | Current Real-Time Plots | Current Locations | Request Data Plots | Status Data Plots | Interesting Plots | ISS Data Archives
Current Instrument Locations
NASA PAYLOAD RACK
ACCELEROMETER LOCATIONS
SYSTEM RACK
INTERNATIONAL RACK
RESUPPLY STOWAGE RACK
ZERO-G STOWAGE RACK
SAMS-II
MAMS HiRA
MAMS OSS
HEAD 121_f0
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HEAD 121_f0
HEAD 121_f0
UF-1 Assembly Sequenc
Acceleration vs. Time
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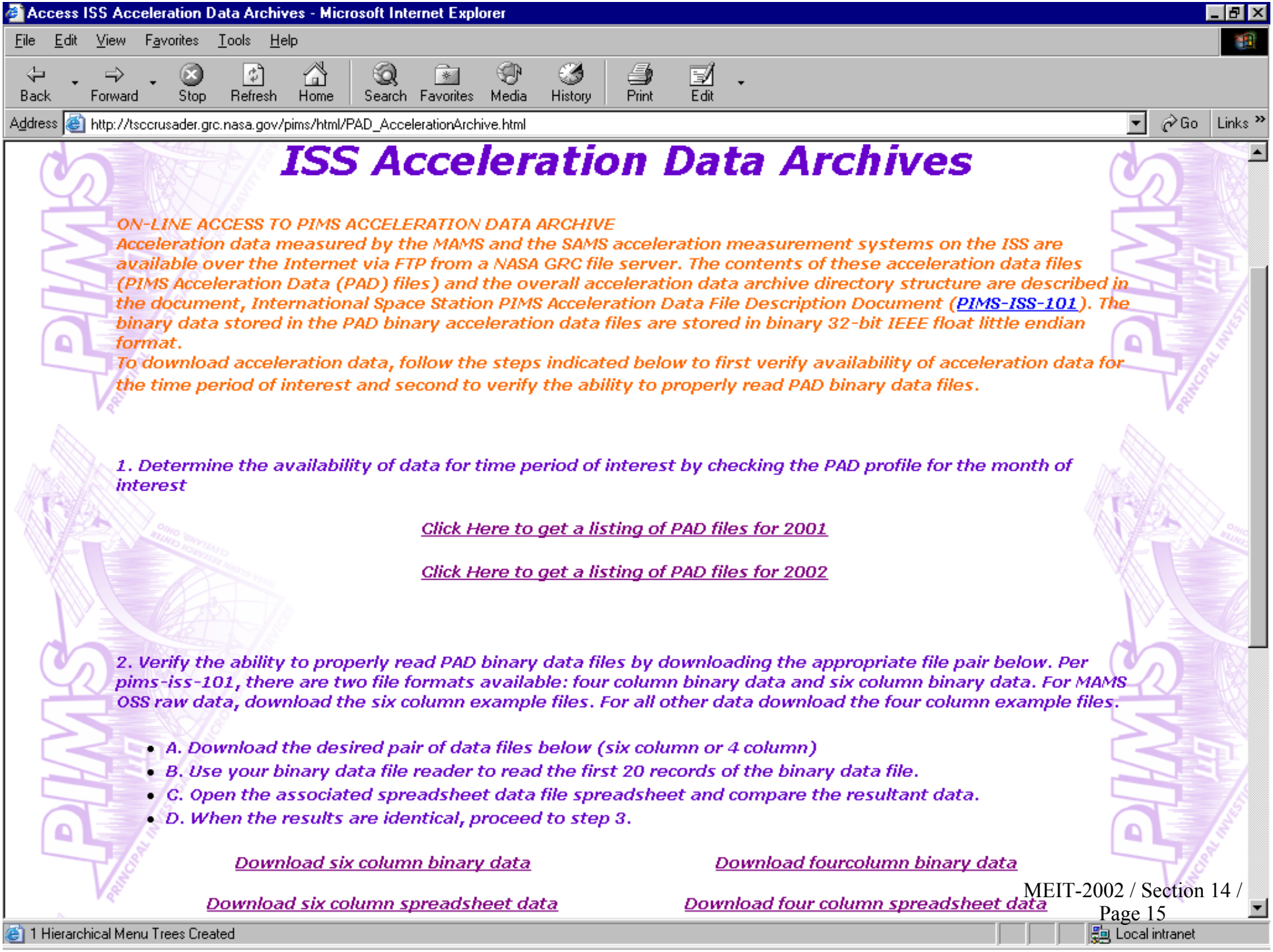
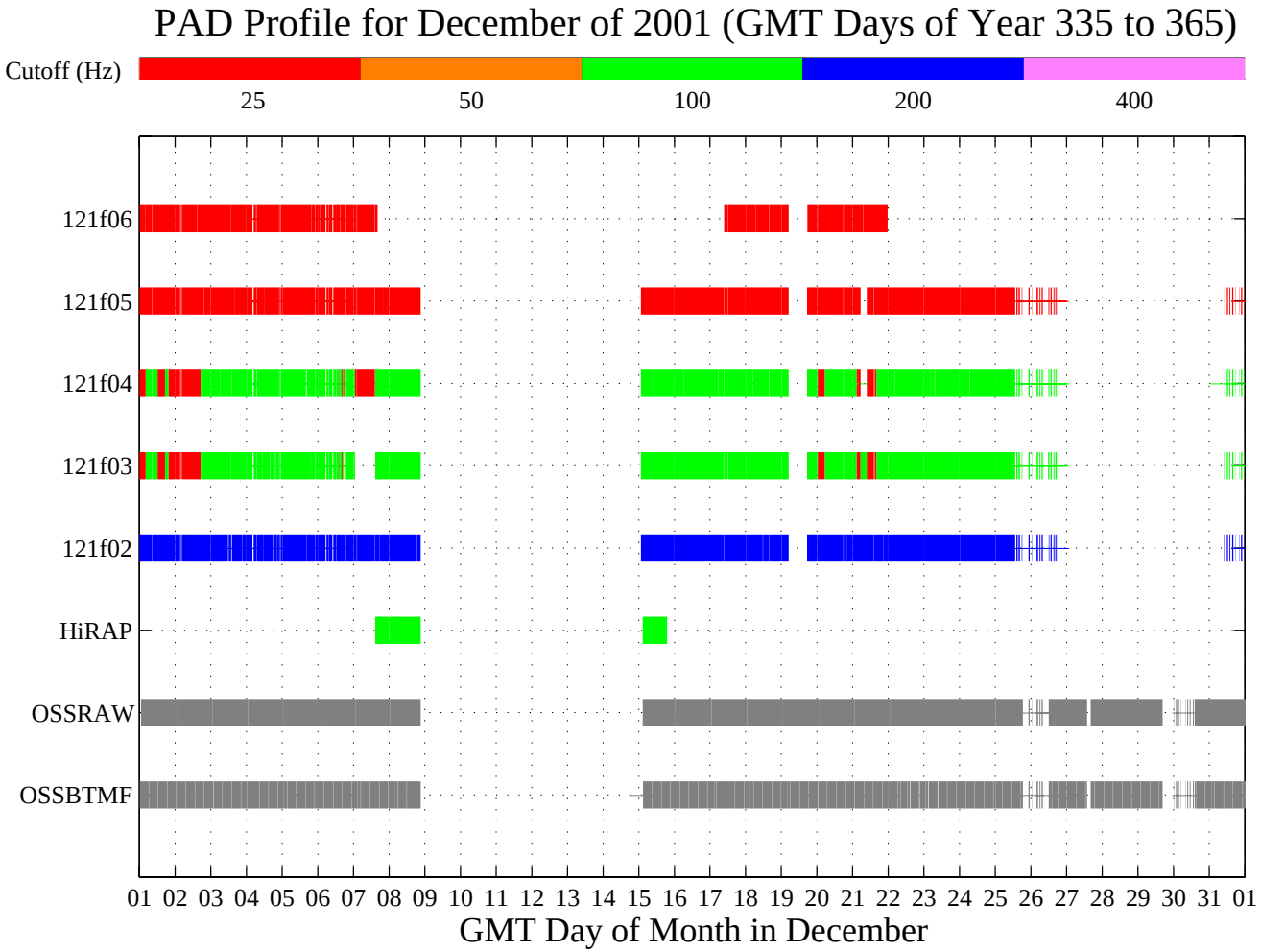
Color Spectrogram
Cumulative RMS vs. Frequency
RMS Acceleration vs Time for Selected Frequency Bands
One Third Octave
Status Data Plots
ISS Acceleration Archives
Interesting Plots
Acceleration Homepage
http://tsccrusader.grc.nasa.gov/pims/html/121_f02/PIMS_ISS_color.html
Local intranet

Main PIMS Web Page Functions

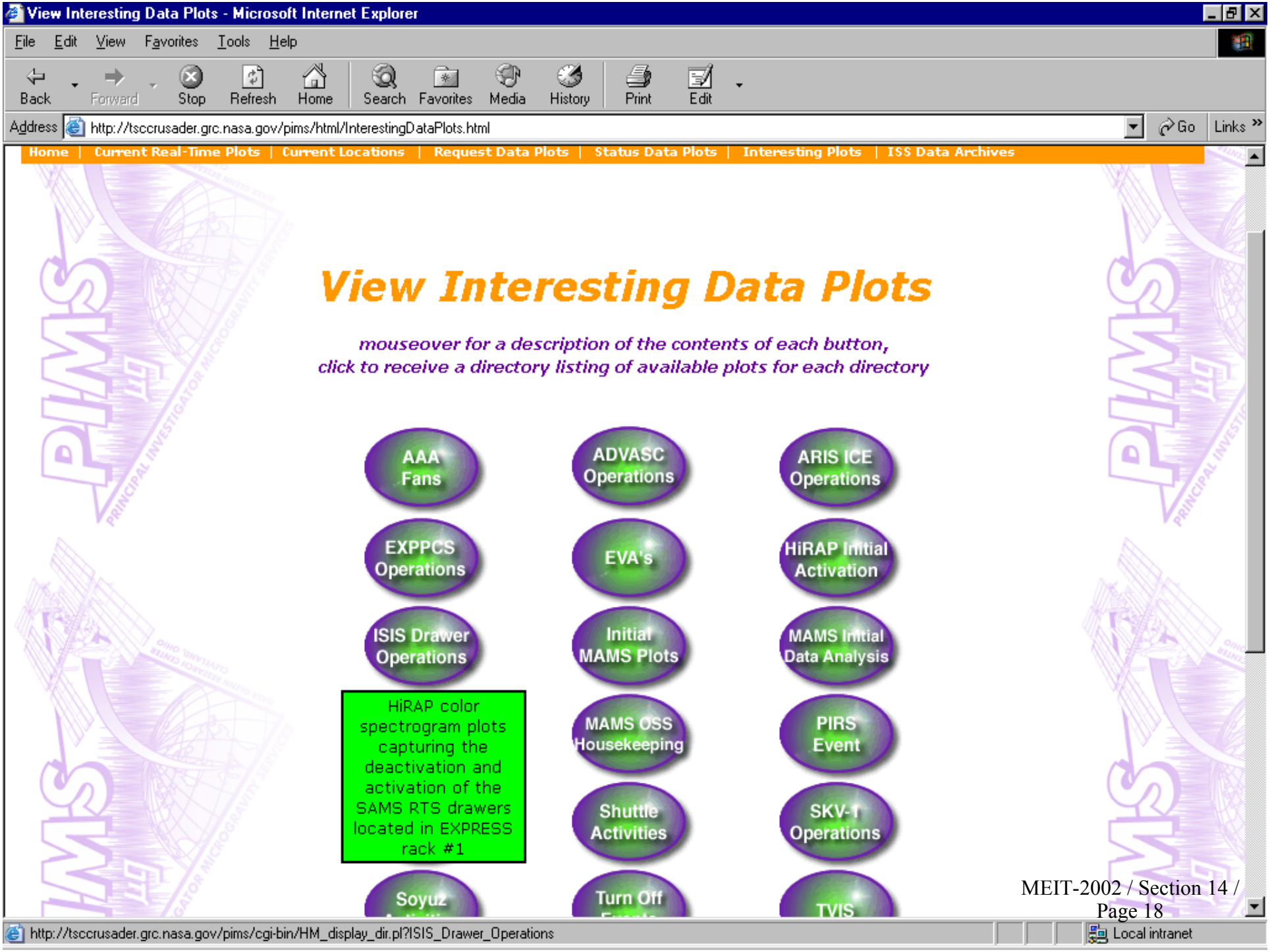
- **Access ISS Acceleration Data Archives**
  - **This link provides instructions on how to downlink acceleration data files and their associated header files. Details of the PIMS Acceleration Data (PAD) file directory structure and file formats are contained in the document PIMS-ISS-101, ISS PIMS Acceleration Data (PAD) File Description Document**
  - **First step is to determine data availability using monthly data availability profiles assembled by PIMS data analysts**
  - **Second step is to verify the ability to properly read PAD binary data files by downloading the appropriate file pair below, either for four column binary data or six column binary data. For MAMS OSS raw data, download the six column example files. For all other data (SAMS, MAMS filtered data, MAMS HiRAP), download the four column example files**
    - Download a pair of test files, an actual binary data file and an Excel spreadsheet containing the first 20 records of that file
    - Use your binary data file reader to read the first 20 records of the binary data file
    - Open the associated spreadsheet data file spreadsheet and compare the resultant data
    - When the results are identical, proceed to steps for downloading desired data from the time period and sensor of interest

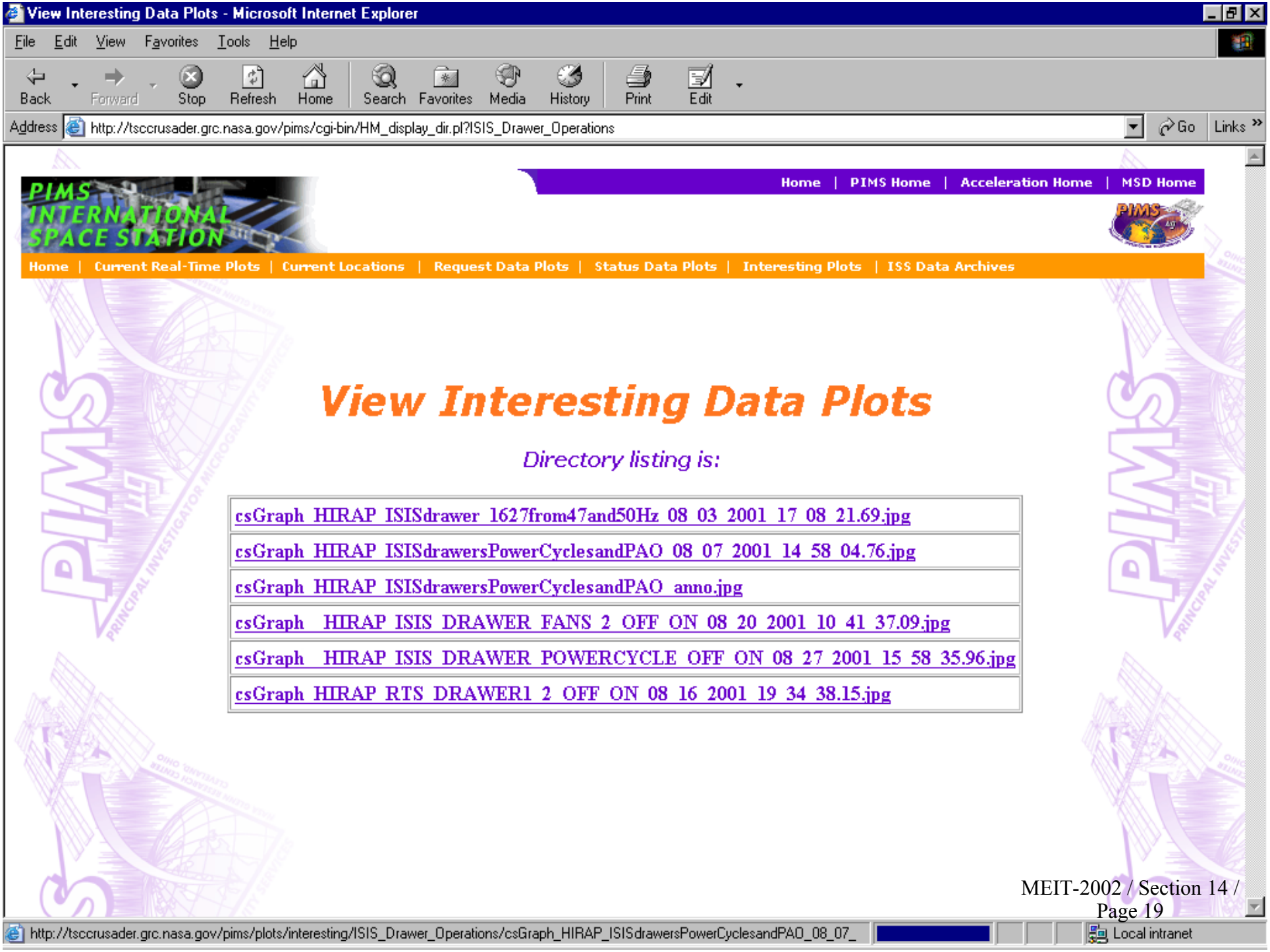

Access ISS Acceleration Data Archives - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Forward Stop Refresh Home Search Favorites Media History Print Edit
Address http://tsccrusader.grc.nasa.gov/pims/html/PAD_AccelerationArchive.html
Go Links
ISS Acceleration Data Archives
ON-LINE ACCESS TO PIMS ACCELERATION DATA ARCHIVE
Acceleration data measured by the MAMS and the SAMS acceleration measurement systems on the ISS are available over the Internet via FTP from a NASA GRC file server. The contents of these acceleration data files (PIMS Acceleration Data (PAD) files) and the overall acceleration data archive directory structure are described in the document, International Space Station PIMS Acceleration Data File Description Document (PIMS-ISS-101). The binary data stored in the PAD binary acceleration data files are stored in binary 32-bit IEEE float little endian format.
To download acceleration data, follow the steps indicated below to first verify availability of acceleration data for the time period of interest and second to verify the ability to properly read PAD binary data files.
1. Determine the availability of data for time period of interest by checking the PAD profile for the month of interest
Click Here to get a listing of PAD files for 2001
Click Here to get a listing of PAD files for 2002
2. Verify the ability to properly read PAD binary data files by downloading the appropriate file pair below. Per pims-iss-101, there are two file formats available: four column binary data and six column binary data. For MAMS OSS raw data, download the six column example files. For all other data download the four column example files.
A. Download the desired pair of data files below (six column or 4 column)
B. Use your binary data file reader to read the first 20 records of the binary data file.
C. Open the associated spreadsheet data file spreadsheet and compare the resultant data.
D. When the results are identical, proceed to step 3.
Download six column binary data
Download fourcolumn binary data
Download six column spreadsheet data
Download four column spreadsheet data
1 Hierarchical Menu Trees Created
Local intranet


PAD Profile for December of 2001 (GMT Days of Year 335 to 365)
Cutoff (Hz)
25
50
100
200
400
121f06
121f05
121f04
121f03
121f02
HiRAP
OSSRAW
OSSBTMF
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 01
GMT Day of Month in December

Main PIMS Web Page Functions

- **View Interesting Data Plots**
  - **This link provides access to a “best of” collection of acceleration data plots generated by PIMS personnel**
  - **The page consists of links to various events documented by PIMS**
  - **Mousing over a particular link gives descriptive text for the files contained within that link**


View Interesting Data Plots - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Forward Stop Refresh Home Search Favorites Media History Print Edit
Address http://tsccrusader.grc.nasa.gov/pims/html/InterestingDataPlots.html
Go Links
Home | Current Real-Time Plots | Current Locations | Request Data Plots | Status Data Plots | Interesting Plots | ISS Data Archives
View Interesting Data Plots
mouseover for a description of the contents of each button,
click to receive a directory listing of available plots for each directory
AAA Fans
ADVASC Operations
ARIS ICE Operations
EXPPCS Operations
EVA's
HiRAP Initial Activation
ISIS Drawer Operations
Initial MAMS Plots
MAMS Initial Data Analysis
HiRAP color spectrogram plots capturing the deactivation and activation of the SAMS RTS drawers located in EXPRESS rack #1
MAMS OSS Housekeeping
PIRS Event
Shuttle Activities
SKV-1 Operations
Soyuz
Turn Off
TVIS
http://tsccrusader.grc.nasa.gov/pims/cgi-bin/HM_display_dir.pl?ISIS_Drawer_Operations
Local intranet


View Interesting Data Plots - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Forward Stop Refresh Home Search Favorites Media History Print Edit
Address http://tsccrusader.grc.nasa.gov/pims/cgi-bin/HM_display_dir.pl?ISIS_Drawer_Operations
Go Links
PIMS INTERNATIONAL SPACE STATION
Home | PIMS Home | Acceleration Home | MSD Home
Home | Current Real-Time Plots | Current Locations | Request Data Plots | Status Data Plots | Interesting Plots | ISS Data Archives
View Interesting Data Plots
Directory listing is:
csGraph_HIRAP_ISISdrawer_1627from47and50Hz_08_03_2001_17_08_21.69.jpg
csGraph_HIRAP_ISISdrawersPowerCyclesandPAO_08_07_2001_14_58_04.76.jpg
csGraph_HIRAP_ISISdrawersPowerCyclesandPAO_anno.jpg
csGraph_HIRAP_ISIS_DRAWER_FANS_2_OFF_ON_08_20_2001_10_41_37.09.jpg
csGraph_HIRAP_ISIS_DRAWER_POWERCYCLE_OFF_ON_08_27_2001_15_58_35.96.jpg
csGraph_HIRAP_RTS_DRAWER1_2_OFF_ON_08_16_2001_19_34_38.15.jpg
http://tsccrusader.grc.nasa.gov/pims/plots/interesting/ISIS_Drawer_Operations/csGraph_HIRAP_ISISdrawersPowerCyclesandPAO_08_07_
Local intranet

Main PIMS Web Page Functions

- **ISS Monitoring System**
  - **This system is not currently on line, but will provide a neural network interpretation of the acceleration data**
- **Request Data Plots**
  - **This link will eventually allow users to generate custom data plots or plot requests.**
  - **Currently this link provides access to the PIMS PI survey. This is the first step in requesting any data plots from PIMS.**
  - **Completing this survey logs the requester into the PIMS User Database**
- **Status Data Plots**
  - **This link will status plot and data requests when the automated "Request Data Plots" link is functional**