

PLASTIC

Software Status

October 2006

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Data Categories

- Proton Moments
- PHA (raw events)
- Alpha and Proton Distributions
- Heavy Ions
- Monitor Rates
- Housekeeping

Software Categories

- DPU Software
- Processing Software
- Monitoring Software
- Displays

DPU Software

- Flight Software has version 3.1.7 (June 2006)
 - All key science data is tested
- Engineering Model has version 3.1.8
 - Tested
 - Incorporates Fixes in Beacon Data (correct data can be found in other packets)
 - This will require us to change Beacon Processing Software
- Microtel Working on version 3.1.9
 - Fixes and adds cycle counts
 - Will be tested on EM, then uploaded

Processing -- Beacon

- Beacon processing software given to SSC 11/05
- Puts raw data in CDF files
- One file per day (UTC time)
- Creates plots of moments and heavy ion counts

Processing -- Real Time Data

- Software that creates ascii files of all data products
- Software that checks the DPU functioning -- do we get what we expect based on instrument output

Beacon Data

Parameter	# Items	bits	resolution	bytes/min	Additional Processing
HKStat (Eng vs Science mode, etc).	1	8	1	1	
Array used for Alpha Peak	1	8	1	1	
Array used for Alpha Dist.	1	8	1	1	
S-channel Switch Step	1	8	1	1	
PAC Value	1	16	1	2	None
MCP Value	1	16	1	2	None
SW H Moments Main Channel	13	16	1	26	None
SW H Moments S- Channel	13	16	1	26	None
SW He++ peak Position step	1	8	1	1	Be able to select ApID327 (triples) or 326 (doubles). Default 327
SW He++ peak Deflection step	1	8	1	1	Be able to select ApID327 (triples) or 326 (doubles). Default 327
SW He++ Energy step of peak	1	8	1	1	Be able to select ApID327 (triples) or 326 (doubles). Default 327
SW He++ distribution	125	8	1	125	Be able to select ApID327 (triples) or
Ebin_1 (for SW ions)	1	8	5	1	Selectable energy step
Ebin_2 (For SW ions)	1	8	5	1	Selectable energy step
SW- Representative Species	10	8	5	10	Sum from bin Ebin_1 or Ebin_2 to 128. Be able to select Ebin_1 and Ebin_2
SW - Overflow Indicator	10	8	5	10	Indicates overflow in above sums
TCR Suprathermal rates - Erange 1	5	8	5	5	Define three E-bins, 0-40, 41-80, 80-128 (would be nice if thresholds were selectable)
TCR Suprathermal rates - Erange 2	5	8	5	5	
TCR Suprathermal rates - Erange 3	5	8	5	5	
DCR Suprathermal rates - Erange 1	5	8	5	5	Define three E-bins, 0-40, 41-80, 80-128 (would be nice if thresholds were selectable)
DCR Suprathermal rates - Erange 2	5	8	5	5	
DCR Suprathermal rates - Erange 3	5	8	5	5	

total

240

Processing -- Level 1

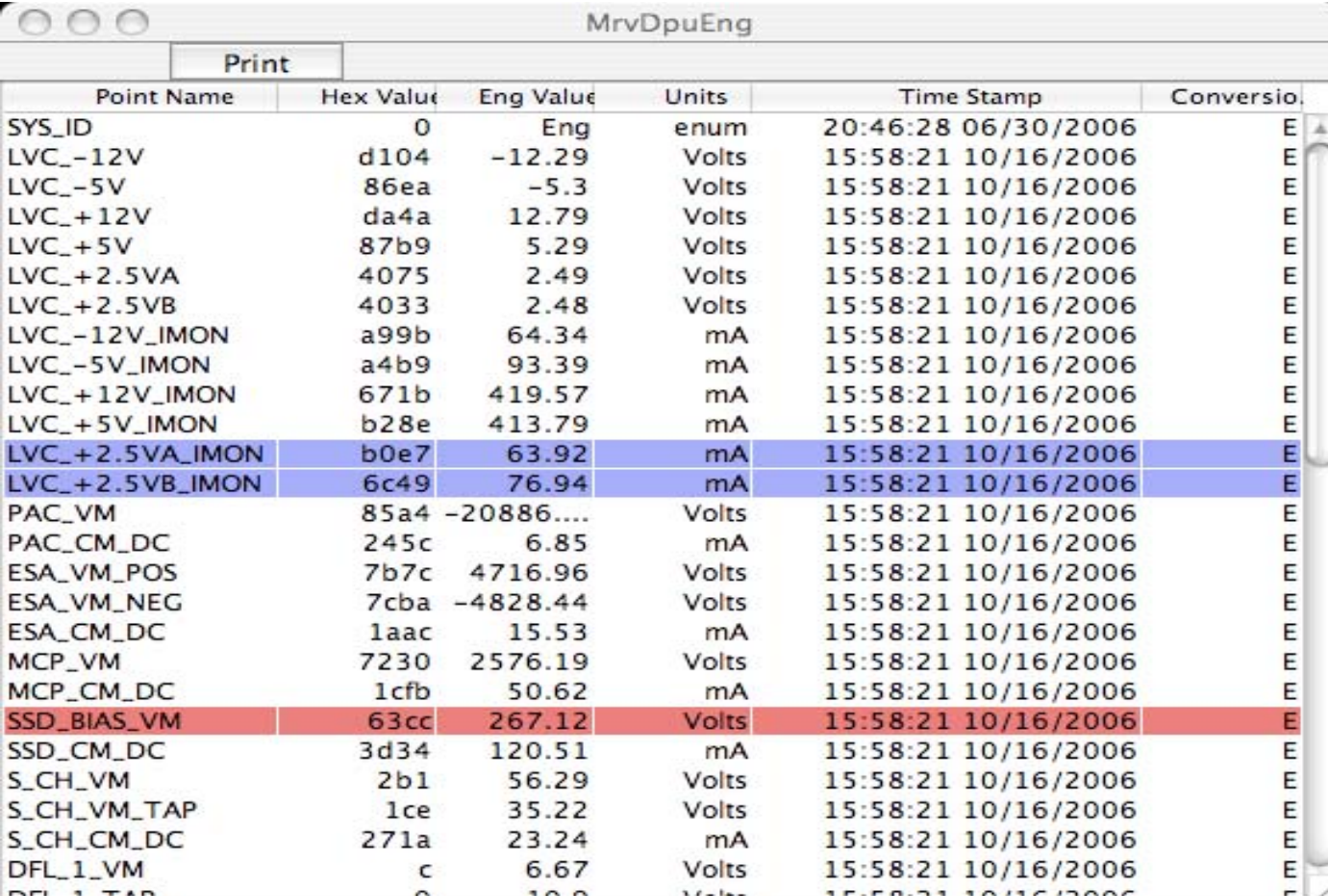
- Highest time resolution for full data set
- Only generated once
- Only raw values (decompressed and formatted)
- -----
- Completed software to search automatically for new L0 files and create cdfs with all data products
- Completed software to convert L0 files to ascii files
- Completed software to create ascii files from cdfs

Processing -- Level 2

- Includes conversions
- All data except raw event data (PHA)
- Reprocessed as our knowledge increases
- Summary data
 - Solar wind proton density and speed
 - Proton temperatures
 - Major ion species densities
- Separated by type of product. High priority products (e.g. H⁺, He⁺⁺) may be released before heavy ion products.
- CDF & tools to convert to other formats
- -----
- Calibration catalog
- Calibration of proton moments

Monitoring -- Real Time

- Displays with limit checking



The screenshot shows a window titled "MrvDpuEng" with a "Print" button. Below the button is a table with the following columns: Point Name, Hex Value, Eng Value, Units, Time Stamp, and Conversion. The table contains 25 rows of data, with some rows highlighted in blue and one row highlighted in red.

Point Name	Hex Value	Eng Value	Units	Time Stamp	Conversion
SYS_ID	0	Eng	enum	20:46:28 06/30/2006	E
LVC_-12V	d104	-12.29	Volts	15:58:21 10/16/2006	E
LVC_-5V	86ea	-5.3	Volts	15:58:21 10/16/2006	E
LVC_+12V	da4a	12.79	Volts	15:58:21 10/16/2006	E
LVC_+5V	87b9	5.29	Volts	15:58:21 10/16/2006	E
LVC_+2.5VA	4075	2.49	Volts	15:58:21 10/16/2006	E
LVC_+2.5VB	4033	2.48	Volts	15:58:21 10/16/2006	E
LVC_-12V_IMON	a99b	64.34	mA	15:58:21 10/16/2006	E
LVC_-5V_IMON	a4b9	93.39	mA	15:58:21 10/16/2006	E
LVC_+12V_IMON	671b	419.57	mA	15:58:21 10/16/2006	E
LVC_+5V_IMON	b28e	413.79	mA	15:58:21 10/16/2006	E
LVC_+2.5VA_IMON	b0e7	63.92	mA	15:58:21 10/16/2006	E
LVC_+2.5VB_IMON	6c49	76.94	mA	15:58:21 10/16/2006	E
PAC_VM	85a4	-20886....	Volts	15:58:21 10/16/2006	E
PAC_CM_DC	245c	6.85	mA	15:58:21 10/16/2006	E
ESA_VM_POS	7b7c	4716.96	Volts	15:58:21 10/16/2006	E
ESA_VM_NEG	7cba	-4828.44	Volts	15:58:21 10/16/2006	E
ESA_CM_DC	1aac	15.53	mA	15:58:21 10/16/2006	E
MCP_VM	7230	2576.19	Volts	15:58:21 10/16/2006	E
MCP_CM_DC	1cfb	50.62	mA	15:58:21 10/16/2006	E
SSD_BIAS_VM	63cc	267.12	Volts	15:58:21 10/16/2006	E
SSD_CM_DC	3d34	120.51	mA	15:58:21 10/16/2006	E
S_CH_VM	2b1	56.29	Volts	15:58:21 10/16/2006	E
S_CH_VM_TAP	1ce	35.22	Volts	15:58:21 10/16/2006	E
S_CH_CM_DC	271a	23.24	mA	15:58:21 10/16/2006	E
DFL_1_VM	c	6.67	Volts	15:58:21 10/16/2006	E
DFL_1_TAP	0	10.0	Volts	15:58:21 10/16/2006	E

Monitoring -- Level 0

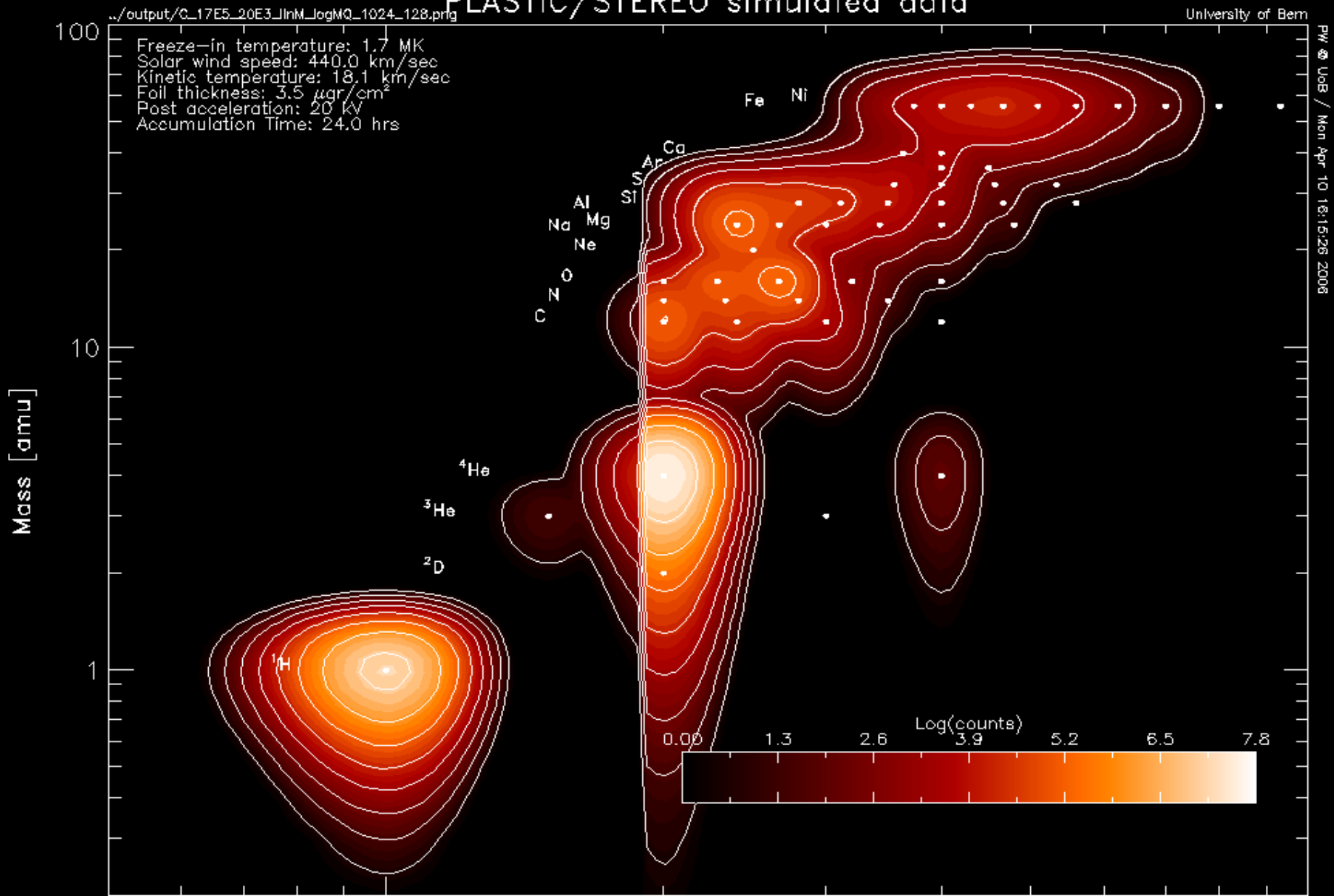
- Histograms of what packets we receive
- Software that logs any data irregularities
 - Identifiable instrument mode
 - Missing packets
 - Time stamps in order

Monitoring -- Level 1

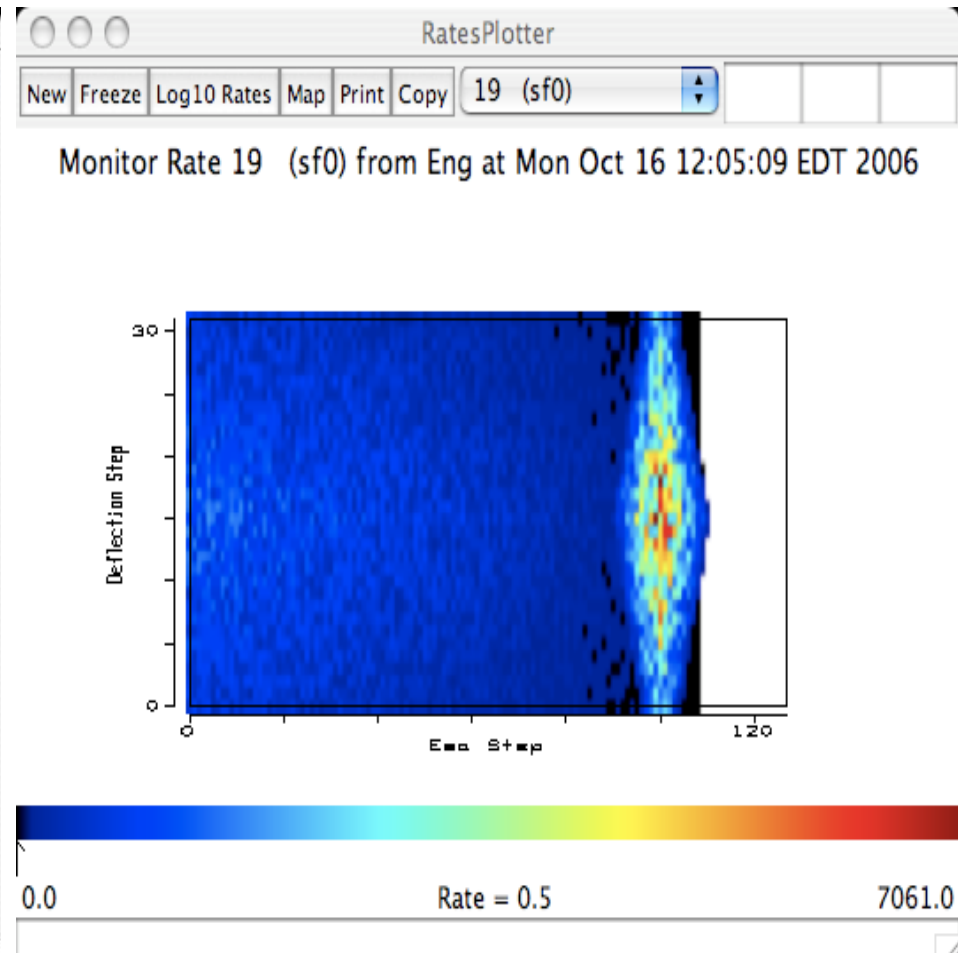
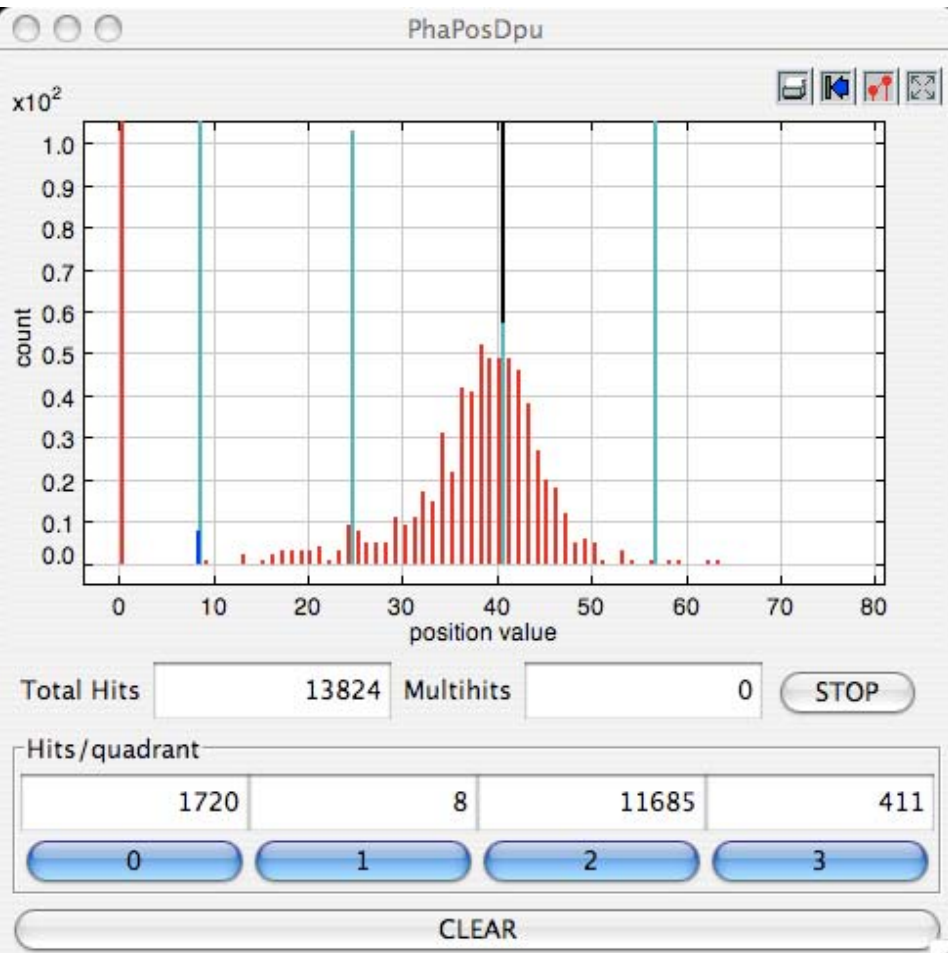
- Level 1 processing software checks for
 - Changes in instrument status
 - Yellow and Red limits in housekeeping
 - Missing packets
- Creates log files that are sent to appropriate people

Displays -- Simulated data

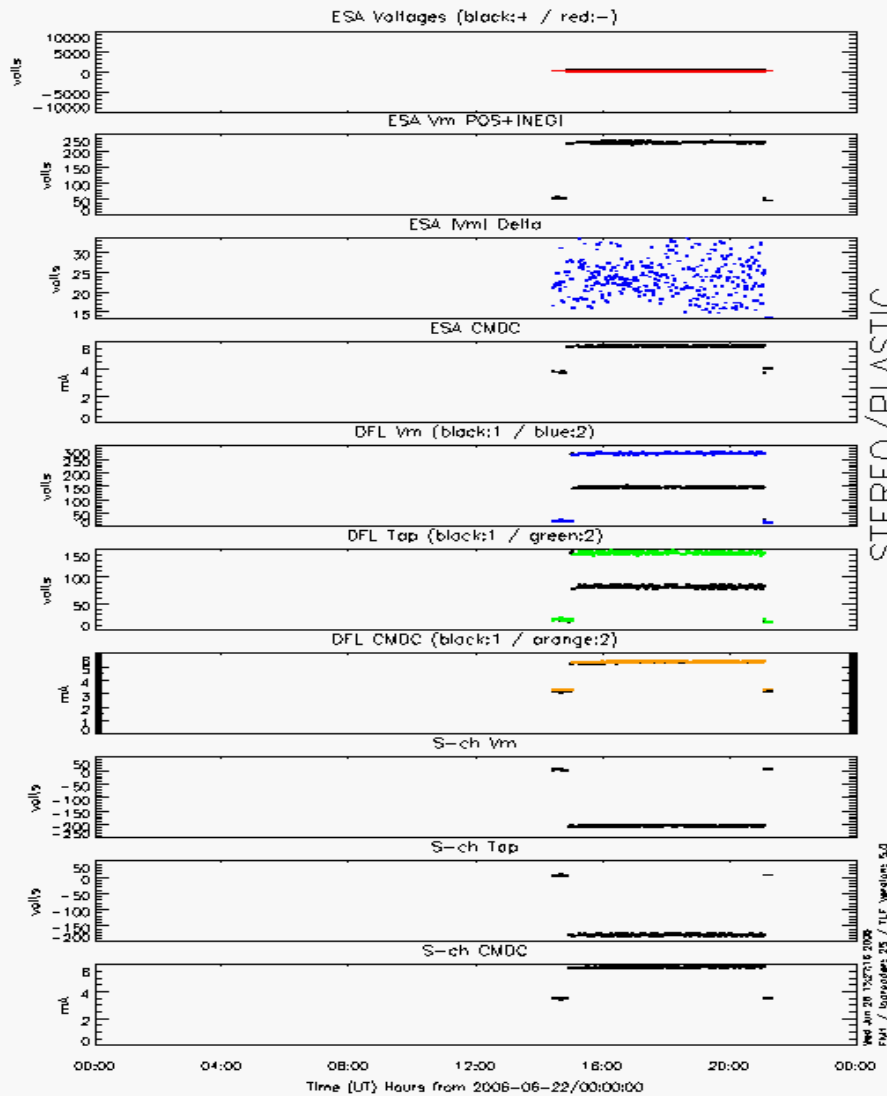
PLASTIC/STEREO simulated data



Displays -- Real Time



Displays -- Level 0 Housekeeping



STEREO/PLASTIC Housekeeping Database

Pre-launch Data

Select Start and End Dates and Plot Item

Plot Item 1:

LVC -12V (volts)
LVC -5V (volts)
ESA_VM_POS (volts)
DFL_1_VM (volts)
DFL_1_TAP (volts)

Plot Table

Plot Item 2:

LVC -12V (volts)
LVC -5V (volts)
ESA_VM_POS (volts)
DFL_1_VM (volts)
DFL_1_TAP (volts)

Plot Table

Start Date: 01-NOV-2004

End Date: 15-MAY-2006

**Date format: DD-MMM-
YYYY or YYYY,Day-of-
Year**

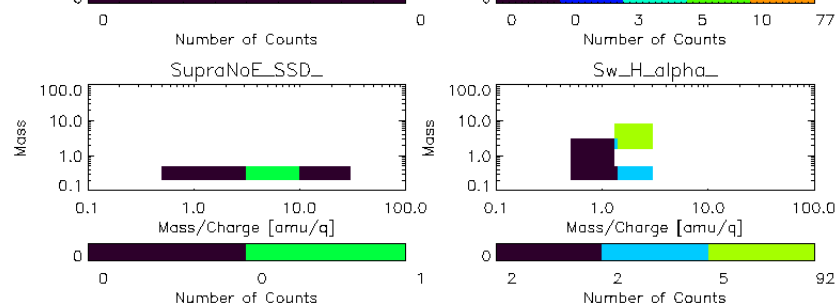
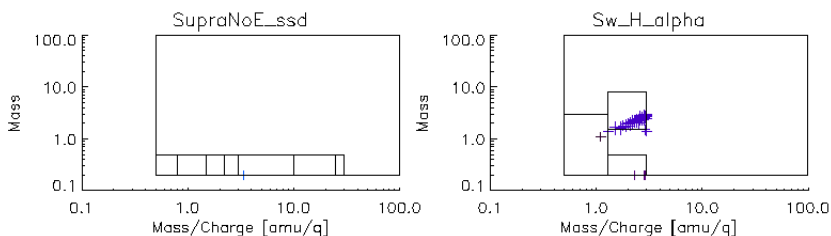
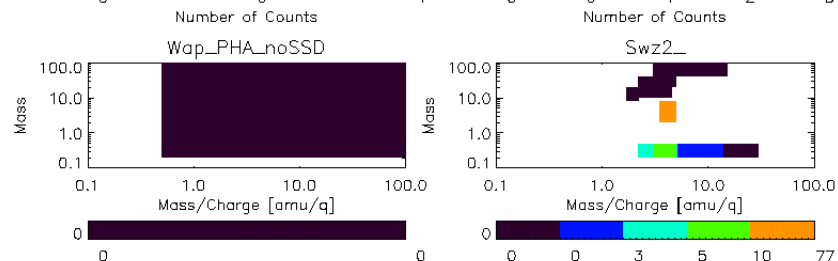
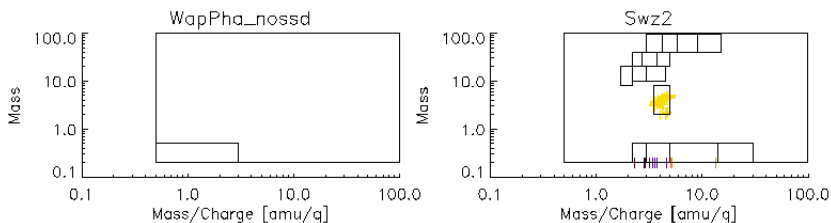
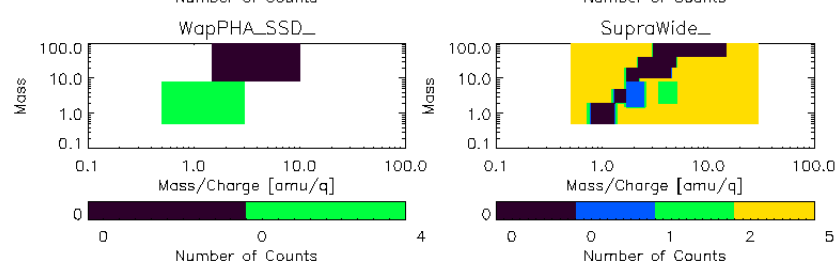
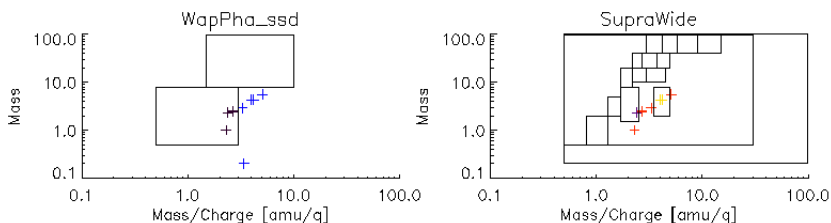
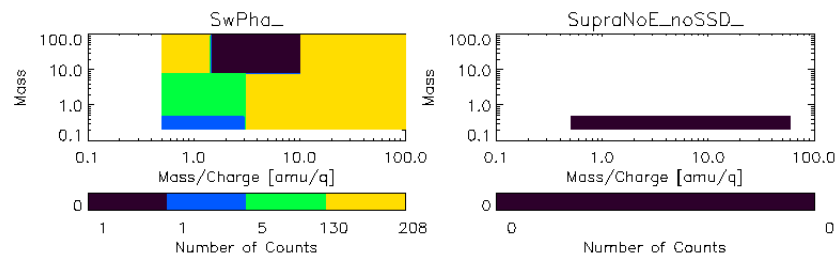
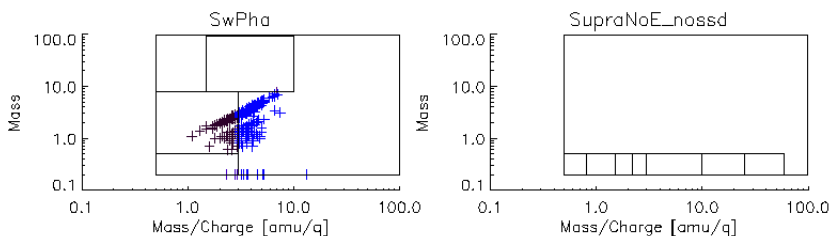
DisplayData

Defaults

Displays -- PHA

PHA_raw_PLA-FM1-041220-1015.log
ESA step: 117

PHA_raw_PLA-FM1-041220-1015.log
ESA step: 117

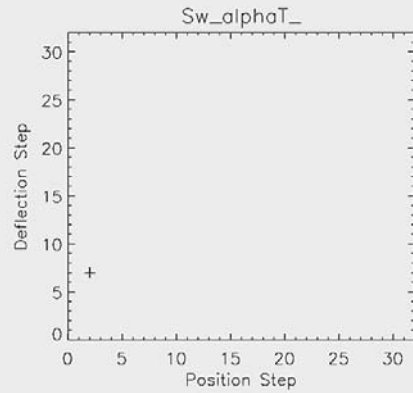
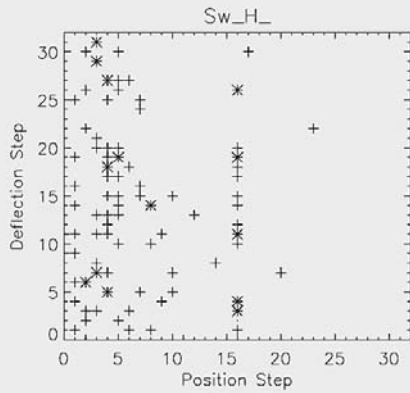


+ 0 + 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10 + 11 + 12 + 13 + 14 + 15

Iame: alicia.araujo The Pub. # 142336 ESF 2005

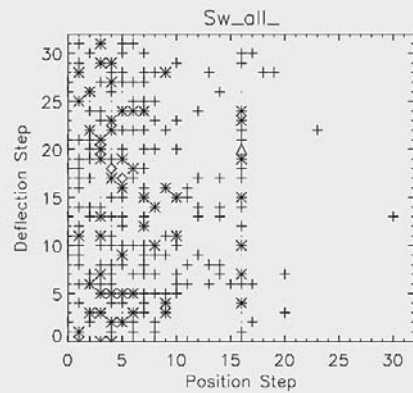
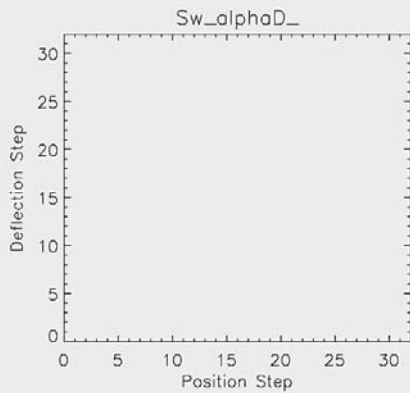
Iame: alicia.araujo The Pub. # 142336 ESF 2005

PLA-FM1-041221-0909.log
 H+, ESA: 8, 60.00 keV, -8.0 position



+:1 diamond:4
 *:2 triangle:5
 .:3 square :6

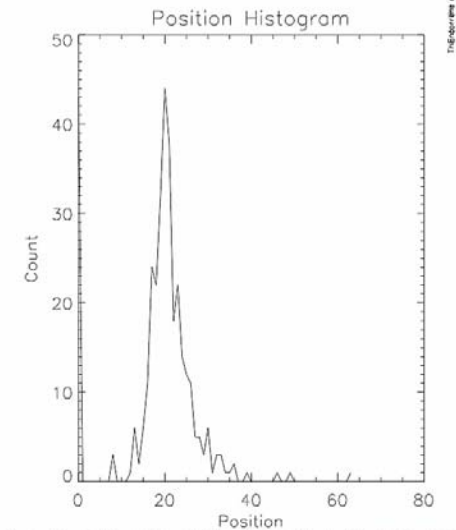
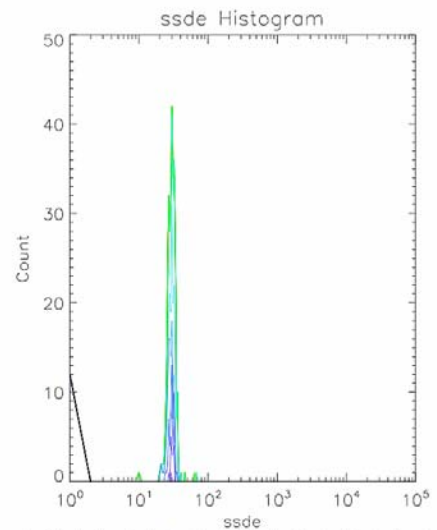
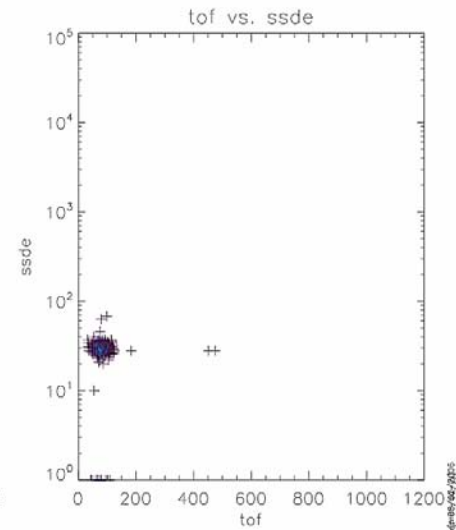
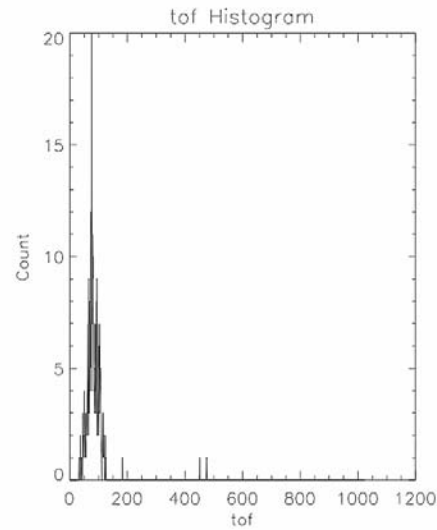
+:1 diamond:4
 *:2 triangle:5
 .:3 square :6



+:1 diamond:4
 *:2 triangle:5
 .:3 square :6

+:1 diamond:4
 *:2 triangle:5
 .:3 square :6

PHA_raw_PLA-FM1-041221-0909.log GoodESA NewMQ
 H+, ESA: 8, 60.00 keV, -8.0 position



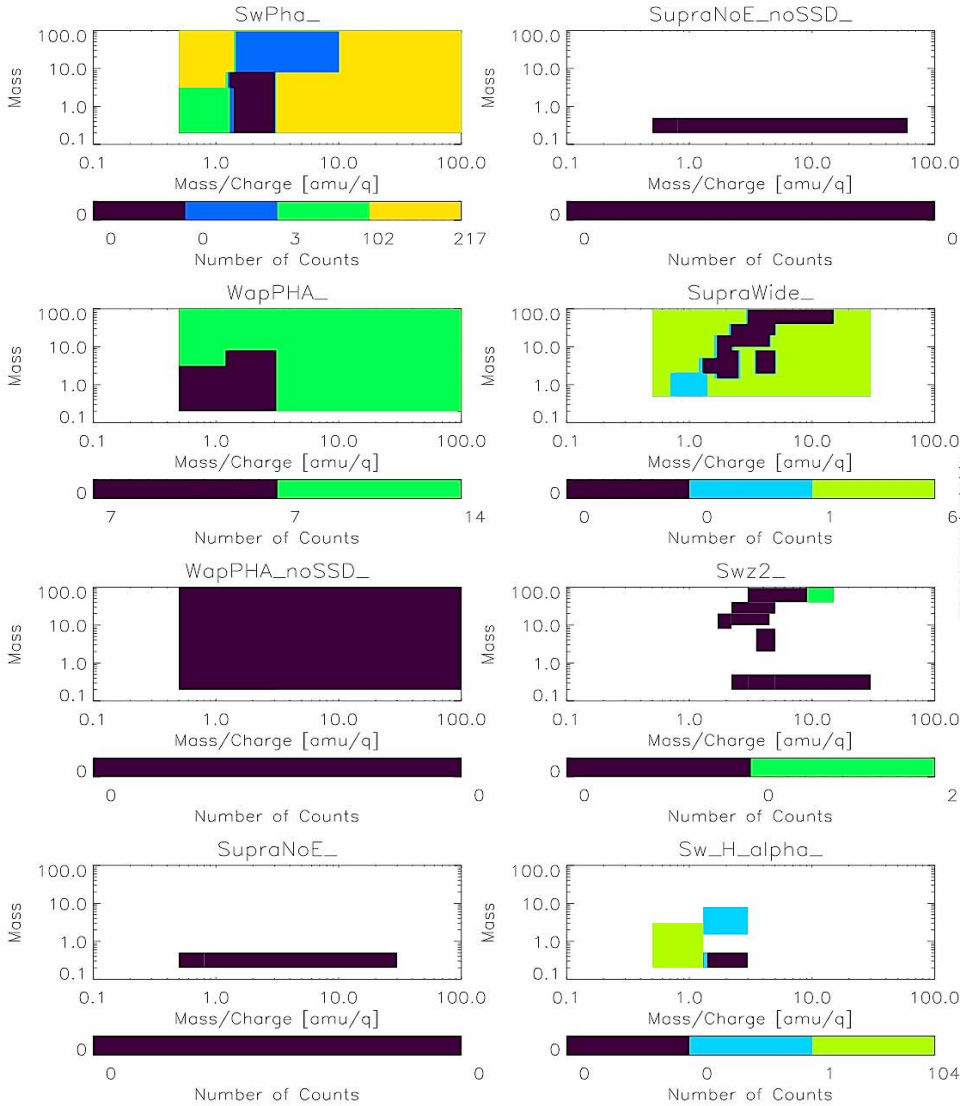
+ 0 + 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10 + 11 + 12 + 13 + 14 + 15 + 16 + 17

The software used here is the GoodESA software

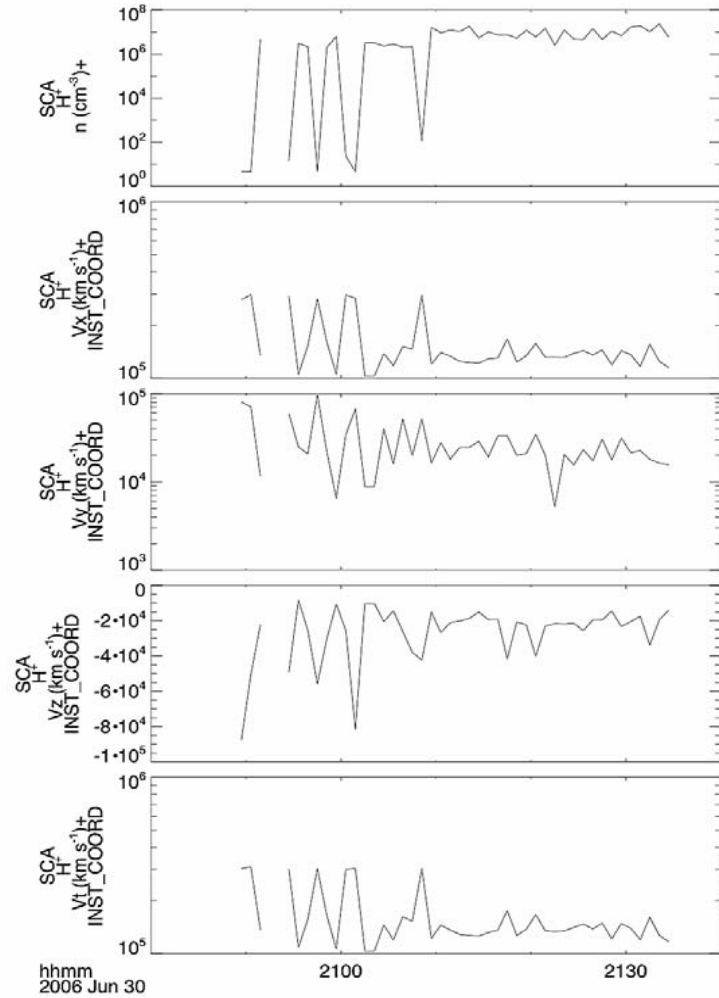
The software used here is the GoodESA software

Displays -- Heavy Ions

PLA-FM1-041221-0909.log
H+, ESA: 8, 60.00 keV, -8.0 position



Displays -- Level 2 Moments



Data Access and Display

- L1 and L2 data to Co-Investigators and IMPACT team as soon as possible (unvalidated)
- Coordinate with IMPACT for display of key parameter and L2 data on their web page
- Our web page will provide additional displays of heavy ions and event data.