

SORCE Weekly Status Report – 7/30/2009 to 8/5/2009

1. Introduction

This status report addresses the performance of the SORCE spacecraft, instruments, and ground assets during the week of Thursday, July 30, through Wednesday, August 5, 2009.

2. Spacecraft Summary (submitted by Deb McCabe, August 6)

07/30	07/31	08/01	08/02	08/03	08/04	08/05
211	212	213	214	215	216	217

There were four MU read zero event this week:

2009/212-04:15:45

2009/215-11:02:20

2009/217-01:48:27

2009/217-17:05:40

Battery Status Update:

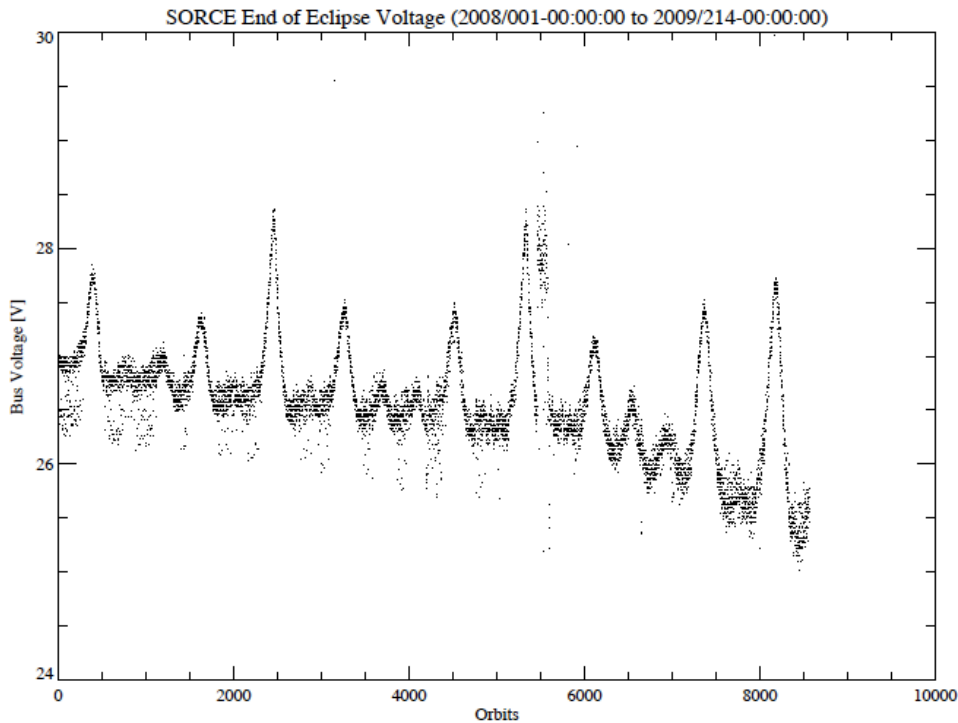
The SORCE battery capacity has been degrading and is being closely monitored. SORCE launched with a full charge rate of 11.5 A. The charge rate was decreased in 0.5V steps at the following times to reduce overcharging the battery:

22 June 2004	from 11.5 to 11.0 V
7 July 2004	from 11.0 to 10.5 V
25 August 2004	from 10.5 to 10.0 V
15 September 2004	from 10.0 to 9.5 V
22 September 2004	from 9.5 to 9.0 V
14 May 2007	computer reset – charge rate 11.5V
29 May 2007	from 11.5 to 9.0 V
4 January 09	safehold event – charge rate to 11.5V
4 January 09	from 11.5 to 9.5 V

In the first half of 2009, the end of the eclipse voltage of CPV 10 (common pressure vessel 10) had decreased by 0.5 volts. Of the eleven CPVs in the battery, CPVs 4 and 9 are also showing minor signs of degradation. The reduced voltages on CPVs 4 and 9 may be due to the drain from CPV 10. The discharge curve for CPV 10 is consistent with a CPV that has lost capacity, and can be seen in the overall end of eclipse voltage in the plot below.

The trickle charge rate was reduced to 0.25V on DOY 184. UV thresholds will be decreased to 24V and 23V for UV1 and UV2 respectively. A new full charge rate will be determined to minimize the time that the battery will be in trickle charge mode.

In addition, battery heater management is being investigated. These 40W heaters are a large power draw. Analysis will be performed to determine if it will be beneficial to not have the battery heater turned on in eclipse.



Reaction Wheels Status Update:

Orbital Science Corporation (OSC) continues to make progress on the Torque Speed Loop (TSL) patch and two wheel control. LASP anticipates receiving a new FSW patch for the TSL in approximately one month. This will be loaded to the spacecraft to verify performance. The patch will be uninstalled after 2 orbits. Team members from OSC, GSFC, and LASP continue to have bi-weekly telecons to review the latest progress.

GCI lockups:

Instrument	Lockup Time	Response Time	Duration (MINUTES)	Lat	Lon
solstice_a	2009/213-02:58:09	2009/213-03:14:51	16.70	-33.8	-56.0
solstice_a	2009/216-07:13:16	2009/216-07:20:26	7.17	-35.8	-72.3
solstice_a	2009/217-05:52:51	2009/217-06:00:30	7.65	-34.1	-52.9
solstice_a	2009/217-07:37:07	2009/217-09:14:48	97.68	-20.7	-52.6
solstice_b	2009/212-02:33:23	2009/212-02:57:46	24.38	-15.7	-76.5
solstice_b	2009/213-01:15:53	2009/213-01:37:37	21.73	-24.5	-49.9
solstice_b	2009/214-01:29:04	2009/214-01:54:39	25.58	-19.8	-67.2
solstice_b	2009/214-08:29:06	2009/214-10:00:21	91.25	-18.5	-42.9
solstice_b	2009/215-22:44:37	2009/215-23:14:37	30.00	-17.5	-41.7
solstice_b	2009/216-03:55:55	2009/216-04:06:04	10.15	-38.9	-36.9
solstice_b	2009/217-05:53:01	2009/217-06:00:25	7.40	-33.8	-52.2
sim_a	2009/211-02:26:20	2009/211-02:39:22	13.03	-32.2	-39.0
sim_a	2009/211-07:34:15	2009/211-08:36:57	62.70	-34.5	-40.8
sim_a	2009/211-09:11:49	2009/211-10:14:06	62.28	-33.5	-63.0
sim_a	2009/212-23:31:57	2009/212-23:58:59	27.03	-9.5	-44.8
sim_a	2009/213-09:53:09	2009/213-10:48:22	55.22	-12.7	-50.0
sim_a	2009/216-03:52:25	2009/216-04:04:35	12.17	-40.0	-52.9
sim_a	2009/217-07:34:37	2009/217-08:43:01	68.40	-25.9	-60.4
sim_a	2009/217-21:35:49	2009/217-21:40:13	4.40	-11.6	-45.0
sim_a	2009/217-23:22:37	2009/217-23:47:35	24.97	-31.6	-39.3
sim_b	2009/211-02:22:11	2009/211-02:39:27	17.27	-24.7	-53.4
sim_b	2009/212-06:11:55	2009/212-07:17:01	65.10	-35.4	-29.4
sim_b	2009/213-09:50:37	2009/213-10:48:27	57.83	-18.4	-57.1
sim_b	2009/215-03:30:59	2009/215-03:47:28	16.48	-36.4	-68.7
sim_b	2009/215-08:43:17	2009/215-09:45:45	62.47	-20.8	-56.5

sim_b	2009/215-10:23:05	2009/215-11:22:54	59.82	-15.0	-73.6
sim_b	2009/216-23:02:14	2009/216-23:30:25	28.18	-22.0	-45.9
sim_b	2009/217-00:47:15	2009/217-01:07:34	20.32	-35.7	-42.5
sim_b	2009/217-07:40:39	2009/217-08:43:06	62.45	-12.9	-42.5
sim_b	2009/217-23:19:45	2009/217-23:47:39	27.90	-26.2	-49.7
tim	2009/212-01:02:33	2009/212-01:20:35	18.03	-28.5	-32.7
tim	2009/212-02:37:56	2009/212-02:57:41	19.75	-25.2	-63.0
tim	2009/212-07:48:49	2009/212-08:51:29	62.67	-35.4	-54.2
tim	2009/214-01:33:08	2009/214-01:54:35	21.45	-28.2	-54.0
tim	2009/214-03:12:26	2009/214-03:31:43	19.28	-31.9	-71.1
tim	2009/214-08:25:07	2009/214-09:25:51	60.73	-26.4	-54.8
tim	2009/215-01:49:58	2009/215-02:11:41	21.72	-30.7	-59.4
tim	2009/215-08:39:25	2009/215-09:43:05	63.67	-28.8	-69.4
tim	2009/217-00:44:04	2009/217-01:08:55	24.85	-31.1	-54.7
XPS	2009/211-10:59:13			-13.2	-54.5
XPS	2009/212-07:49:55			-34.1	-50.3
XPS	2009/212-07:50:02			-33.9	-49.6
XPS	2009/212-07:50:46			-32.9	-47.0
XPS	2009/212-20:23:22			-21.6	19.8
XPS	2009/212-23:43:01			-32.1	-10.8
XPS	2009/213-20:09:04			38.4	-82.0
XPS	2009/214-03:14:43			-35.3	-62.1
XPS	2009/214-06:50:05			-22.7	-24.2
XPS	2009/215-01:55:44			-38.1	-36.8
XPS	2009/215-07:05:57			-21.5	-32.8
XPS	2009/216-00:26:04			-26.4	-53.3
XPS	2009/216-08:59:42			-18.8	-64.2

	SIM A	SIM B	SOL A	SOL B	TIM	XPS*
Week	9	9	4	7	9	13
Total	2059	2622	1424	1695	2281	2136

3. Ground Support / Contact Summary (submitted by D. McCabe)

Fourteen ground station contacts were performed over the past week.

	Captured VCDUS	Recorded VCDUS	%
SC housekeeping	317018	317019	100
IM housekeeping	43002	43003	100
Science	309799	309800	99.98

4. Instrument Status

4.1. TIM (submitted by Greg Kopp, 05 August)

TIM operations during previous week

- Normal Ops (TSI data w/ Cavity B)
- Cavity A&B, A&C comparisons
- FOV Map

Current work

- Normal operations
 - Version 9 data processing provides daily updated TSI values

TIM anomalies during previous week

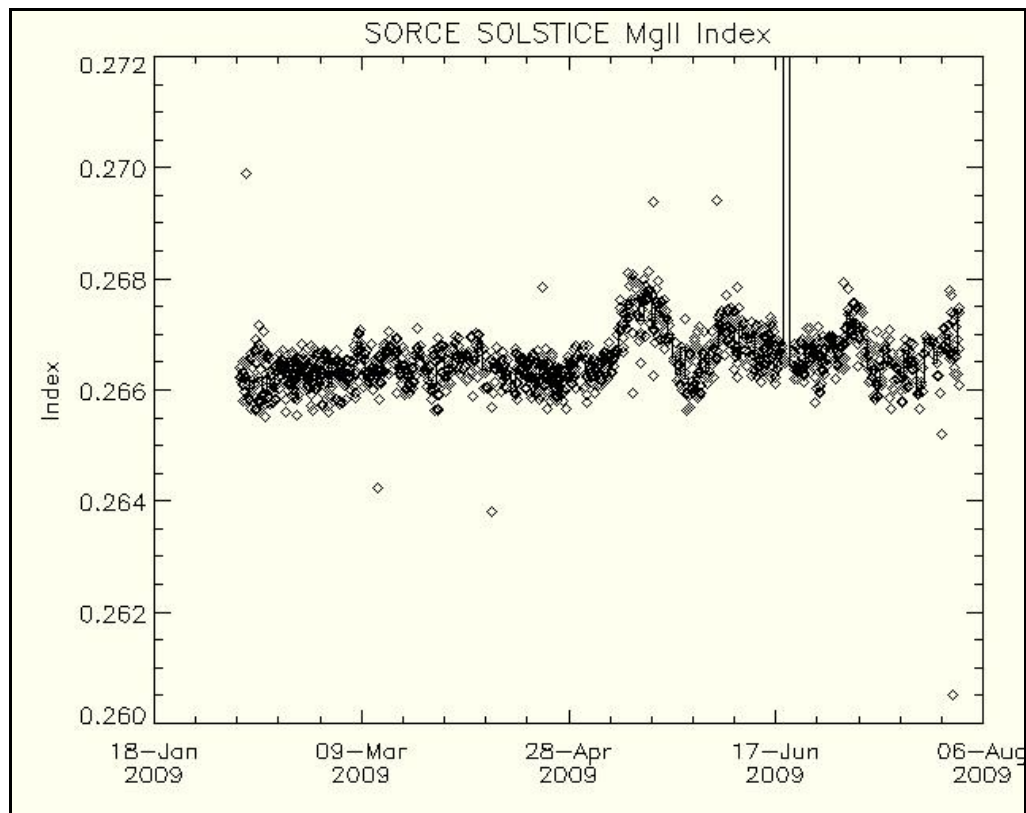
- None

4.2. SIM

4.3. SOLSTICE (submitted by Marty Snow, Aug. 7)

For days 2009/212 (July 31) to 2009/219 (Aug. 7):

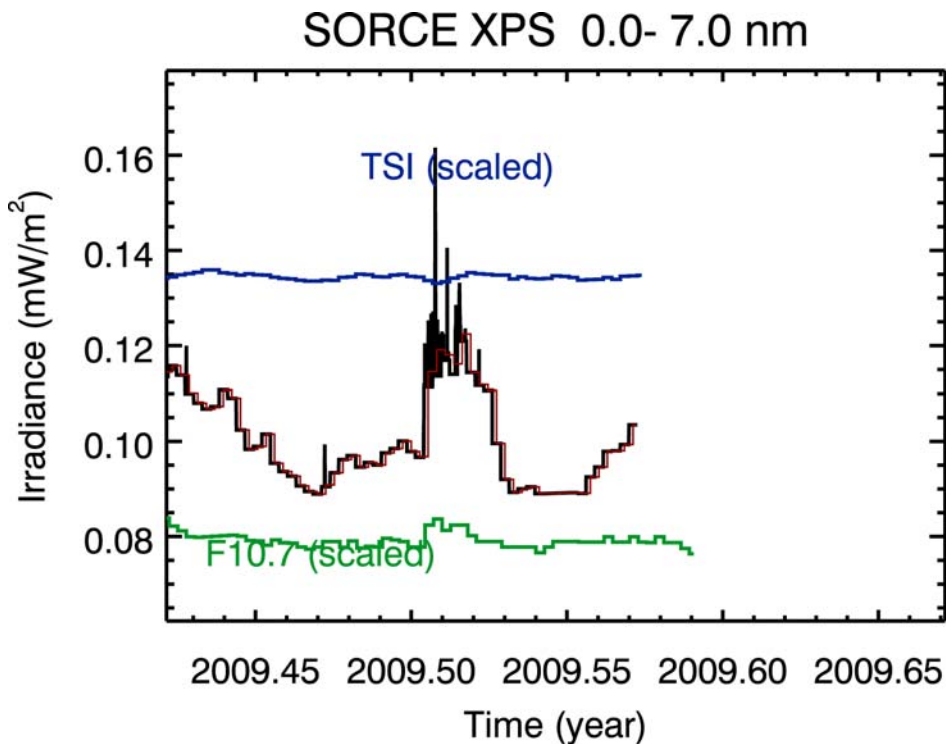
- SOLSTICE A grating drive errors: None
- SOLSTICE B grating drive errors:
2009/212, 02:59:00
- Data Gaps for SOLSTICE A (date, length in minutes):
2009/213, 03:15:38 17 minutes
2009/216, 07:21:13 8 minutes
2009/217, 06:01:24 9 minutes
2009/217, 09:15:36 98 minutes
- Data Gaps for SOLSTICE B (date, length in minutes):
2009/212, 02:58:48 25 minutes
2009/213, 01:38:25 23 minutes
2009/214, 01:55:41 27 minutes
2009/214, 10:01:08 92 minutes
2009/215, 23:15:24 31 minutes
2009/216, 04:06:51 11 minutes
2009/217, 06:01:28 8 minutes
2009/218, 01:27:14 26 minutes



4.4. **XPS** (submitted by Tom Woods, 05 August)

For days 2009/205 (July 24) to 2009/216 (August 4):

- Number of XPS GCI errors: 22
- SORCE XPS Data Gaps: None
- SORCE XPS Calibration Experiment Duration:
1121.00 sec (19 integrations) at 2009/205 8:0
- Flares: None above class M1.0



5. **Planning** (automated report submitted by Jay Kominek, August 6)

Plans completed 30 July – 06 August:

SORCE Spacecraft

Activity	Total	Total Time
Solar Rolls	376	12:46
Stellar Rolls	487	14:57
Ram Avoidance	0	0:00
Solar Alignment	4	1:16
Stellar Alignment	0	0:00
Field of View Maps	0	0:00
FSS Calibration	0	0:00
Station Contacts	14	3:14
GCI Checks	832	0:13
State Vector Upload	7	0:21
MU Checksum	1	0:12

SIM A (Primary)

Solar Activity	Total	Total Time
ESR Mode	7	5:12
ESR Mode with HRT	0	0:00
IR Scan	7	7:05
Quick Scan	14	5:39
Quick Scan HRT	1	0:24

Calibration Activity		
Fixed Wavelength	0	0:00
Servo Gain Calibration	2	1:20
Solar Alignment	2	1:21
Field of View Map	0	0:00
Prism Calibration	0	0:00
Image Light	1	0:06
Image Dark	1	0:05
ESR Full Scan	0	0:00
Dark	30	0:22
Special Activity		
Power Cycle Checks	208	13:52

SIM B (Secondary)

Solar Activity	Total	Total Time
ESR Mode	0	0:00
ESR Mode with HRT	0	0:00
IR Scan	0	0:00
Quick Scan	0	0:00
Quick Scan HRT	1	0:24
Calibration Activity		
Fixed Wavelength	0	0:00
Servo Gain Calibration	2	1:20
Solar Alignment	2	1:21
Field of View Map	0	0:00
Prism Calibration	0	0:00
Image Light	1	0:06
Image Dark	1	0:05
ESR Full Scan	0	0:00
Dark	2	0:01
Special Activity		
Power Cycle Checks	208	13:34

SOLSTICE A (MUV)

Solar Activity	Total	Total Time
Normal Scan	93	73:08
Quick Scan	43	11:45
Mini Quick Scan	35	10:06
Stellar Activity		
Fixed Wavelength	0	0:00
Companion	0	0:00
Stellar Scan	0	0:00
Zero Order Scan	0	0:00
Number Unique Targets	0	0:00
Calibration Activity		
Filter Calibration	1	1:01
Fixed Wavelength	0	0:00
AB Comparison	1	0:53
Mini 64 Scan	7	7:05
MUV Solar Alignment	0	0:00
FUV Solar Alignment	0	0:00
MUV Stellar Alignment	0	0:00
FUV Stellar Alignment	0	0:00
MUV Field of View Map	0	0:00
FUV Field of View Map	0	0:00
Special Activity		
Power Cycle Checks	104	4:28
Step Response Test	1	0:02

SOLSTICE B (FUV)

Solar Activity	Total	Total Time
Normal Scan	94	80:51
Quick Scan	44	8:16
Mini Quick Scan	37	6:59
Stellar Activity		
Fixed Wavelength	657	23:26
Companion	30	1:45
Stellar Scan	56	6:25
Zero Order Scan	252	7:23
Number Unique Targets	44	39:56
Calibration Activity		
Fixed Wavelength	0	0:00
AB Comparison	1	0:53
Mini 64 Seam	7	7:05
MUV Solar Alignment	0	0:00
FUV Solar Alignment	0	0:00
MUV Stellar Alignment	2	0:18
FUV Stellar Alignment	2	0:18
MUV Field of View Map	0	0:00
FUV Field of View Map	0	0:00
Special Activity		
Power Cycle Checks	104	4:37
Step Response Test	1	0:02

TIM

Solar Activity	Total	Total Time
Normal Solar	103	104:24
Normal Eclipse	111	57:53
Calibration Activity		
Degradation A	1	1:02
Degradation C	0	0:00
Aliveness D	0	0:00
Gain Calibration AB	0	0:00
Gain Calibration CD	0	0:00
Solar Alignment	2	1:21
Field of View Map	0	0:00
Special Activity		
Power Cycle Checks	208	8:57

XPS

Calibration Activity	Total	Total Time
Calibration	0	0:00

Since December 2005, XPS is activated for a continuous 1-min integration at filter wheel position 6 (0.1-18 nm range) and only has a monthly calibration experiment.

6. Data Processing Summary

TIM (submitted by Doug Lindholm, 31 July 2009)

- Status
 - Version 9 routine processing is ongoing.
 - Version 9 TSI data are available on LISIRD, the SORCE web site, and the GES DISC with the new LASP ASCII file format.

- Work in progress
 - Processing dark irradiances.
 - Preparing for version 10 reprocessing.
 - Code modifications (generalizations) to support Glory TIM data processing.
- Future Plans
 - Field of view analysis and pointing correction.

SOLSTICE (submitted by Doug Lindholm, 31 July 2009)

- Status
 - Modifications of software are being evaluated to fix wavelength shift problems in the new, unreleased version 10 data. If a resolution is not found soon, we will reprocess level 3 version 10 data by applying the new degradation corrections to the version 9 level 2 data.
 - Routine data processing is producing version 9 level 3 FUV and MUV SOLSTICE data products. These are available on the SORCE web site and LISIRD.
 - MgII index is being produced routinely and is available on the SORCE web site.
- Work in Progress
 - Debugging shift in wavelength correction.
 - Evaluating tasks for version 11 reprocessing.
 - Filter experiment analysis to improve dead time correction and filter transmission.
- Future Plans
 - Analysis of instrument misalignment calibration.
 - Analysis of level 3 uncertainties.
 - Improved Jan 2006 slit anomaly correction.
 - Improvement of field of view maps.

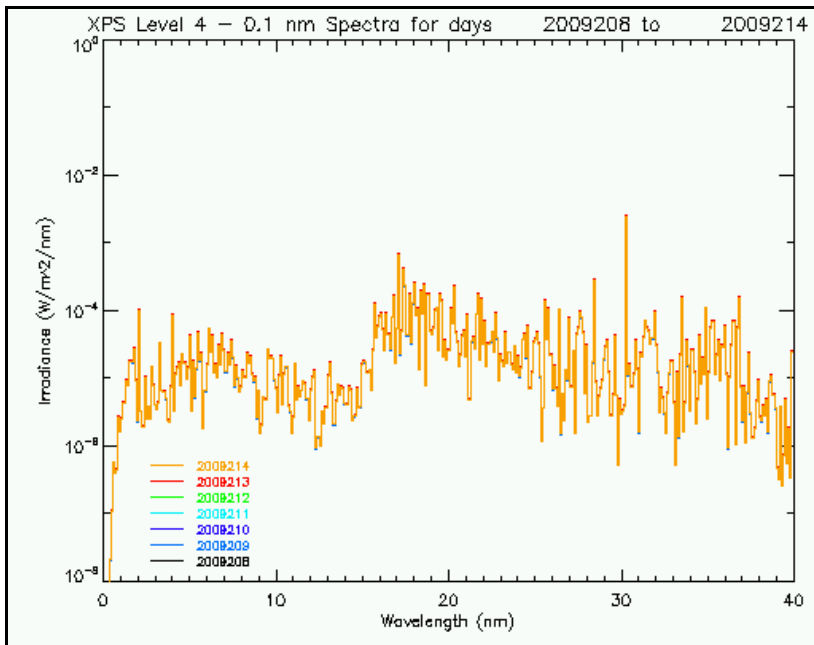
SIM (submitted by Doug Lindholm, 31 July 2009)

- Status
 - The routine processing of version 17 data is ongoing.
 - The level 3 data products are available on the SORCE web site and LISIRD.
- Work in Progress
 - Calibration to improve the quality of early mission data.
 - Testing of new SIM exposure time algorithm.
- Future Plans
 - Process SIM B.
 - Investigate UV degradation.
 - Consider field of view correction for data affected by the filter wheel anomaly.

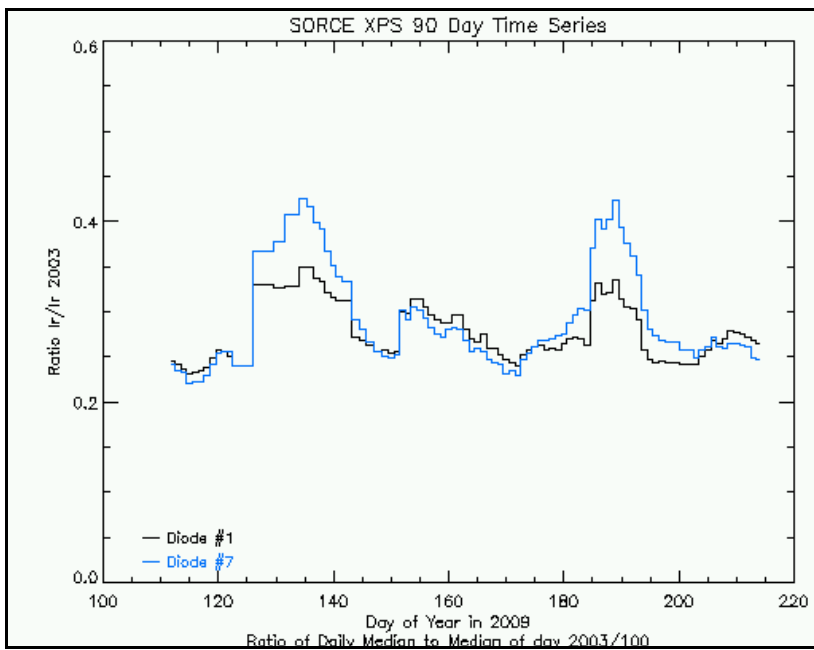
XPS (submitted by Brian Templeman, 06 August 2009)

- Version 9 XPS data are being routinely reprocessed and released.
- The safe-hold events in January did not appear to affect data quality.
- SORCE XPS Data Processing Statistics for 2009/208 to 2009/214

Total level 1b Observations Processed:	21583
Percent used in level 2 Processing:	67.9007
Total level 3 Observations Processed:	14655



Weekly Image



Diode Time Series