

V&V Reference Report

L2 ASCDS Version : 10.7

Observation 21528 - L2 Version 1
Chandra X-Ray Center

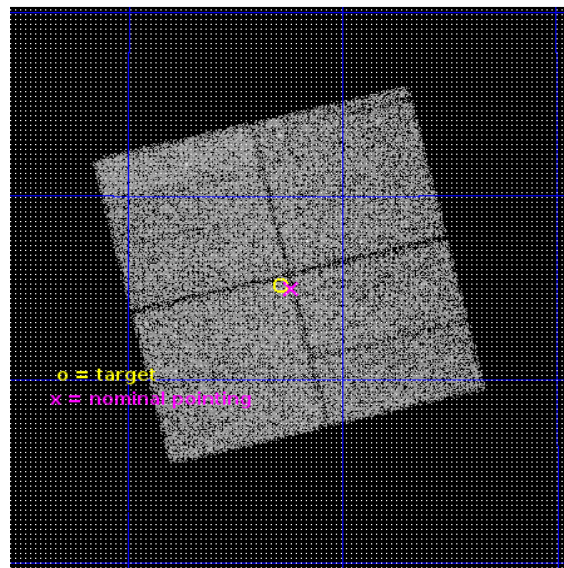
L2 Processing Date : Nov 7 2018

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1 Front

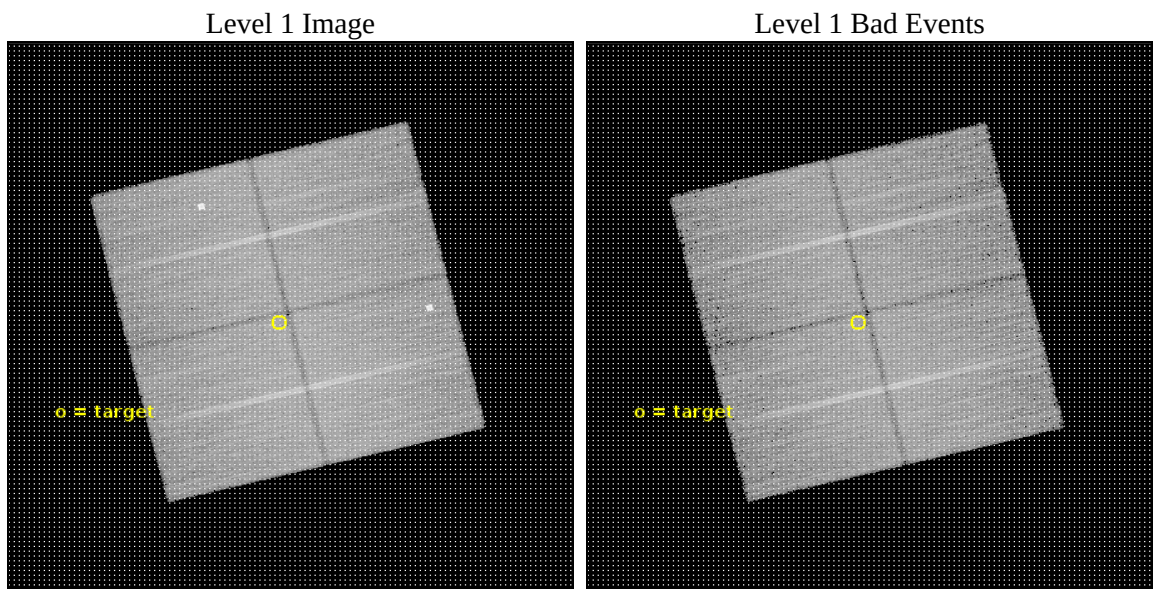
seq_num	801812	Sequence number
obs_id	21528	Observation id
title	Is there an enormous cold front at the virial radius of the Perseus cluster?	Proposal title
observer	Stephen Walker	Principal investigator
object	Perseus_west_cf_1	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	48.322083	Observer's specified target RA [deg]
dec_targ	41.584861	Observer's specified target Dec [deg]
ra_nom	48.309420651467	Nominal RA [deg]
dec_nom	41.582591869371	Nominal Dec [deg]
roll_nom	166.2170952652	Nominal Roll [deg]
revision	1	Processing version of data
ontime	36076.340953469	Sum of GTIs [s]
livetime	35604.976999896	Livetime [s]
ontime0	36076.21778357	Sum of GTIs [s]
ontime1	36073.117693186	Sum of GTIs [s]
ontime2	36076.299903631	Sum of GTIs [s]
ontime3	36076.340953469	Sum of GTIs [s]
l2events	103975	Number of level 2 events



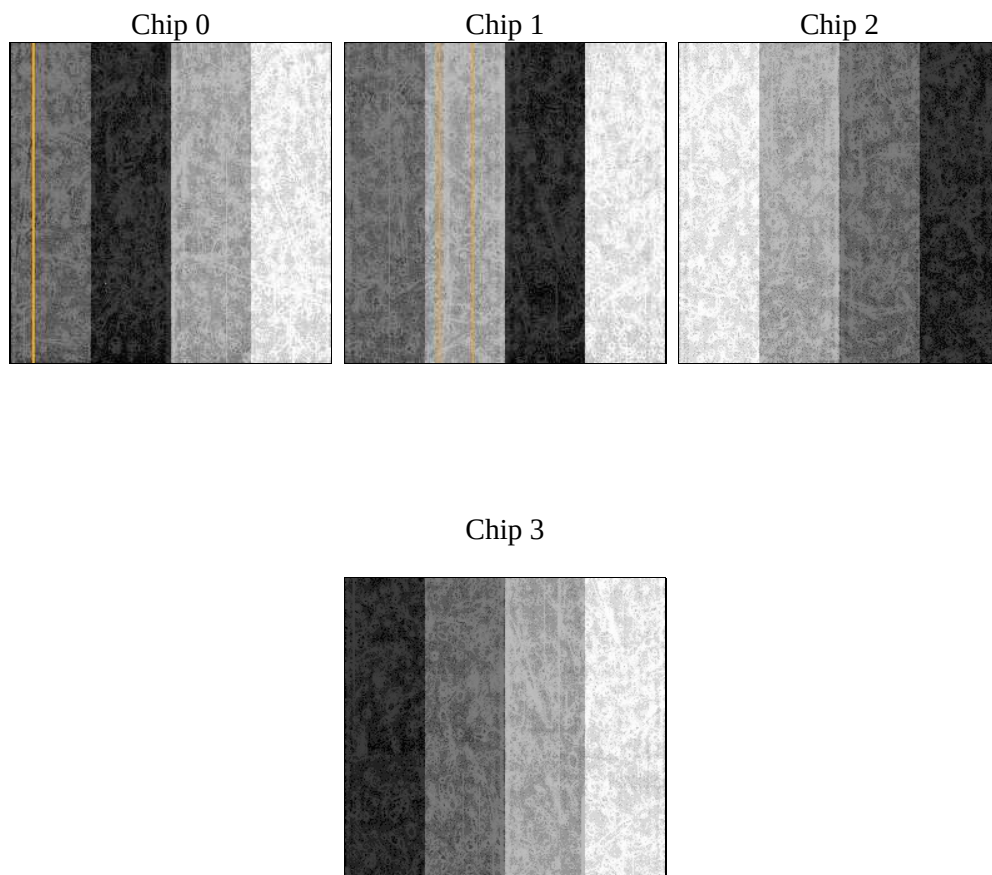
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	36000.000000	[s] Scheduled observation exposure time
ascdsver	10.7	Processing system revision	ontime	36076.340953469	Sum of GTIs [s]
caldsver	4.8.0.1	 	ontime0	36076.21778357	Sum of GTIs [s]
date	2018-11-07T21:42:10	Date and time of file creation	ontime1	36073.117693186	Sum of GTIs [s]
revision	1	Processing version of data	ontime2	36076.299903631	Sum of GTIs [s]
			ontime3	36076.340953469	Sum of GTIs [s]
			l1events	1048553	Number of level 1 events

2.1.4 Events

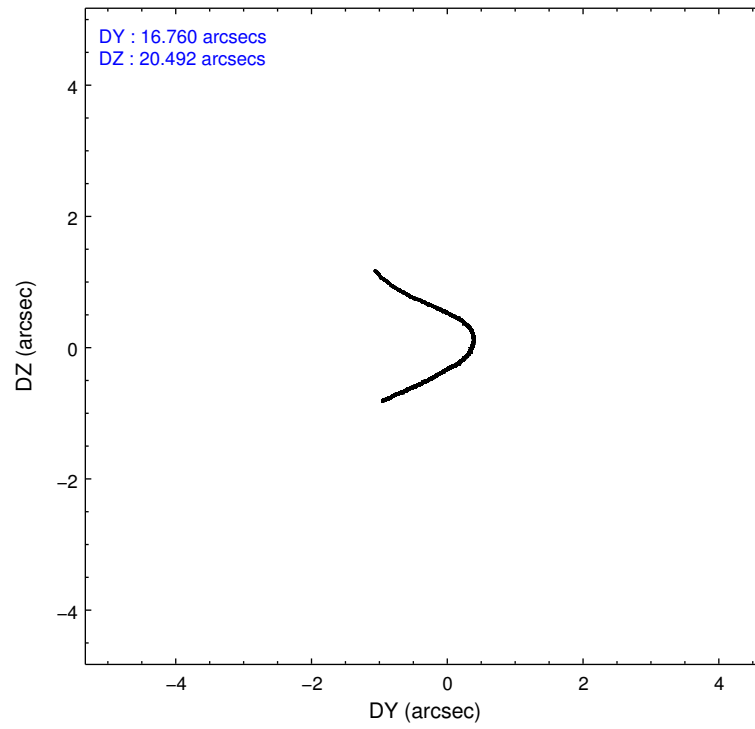
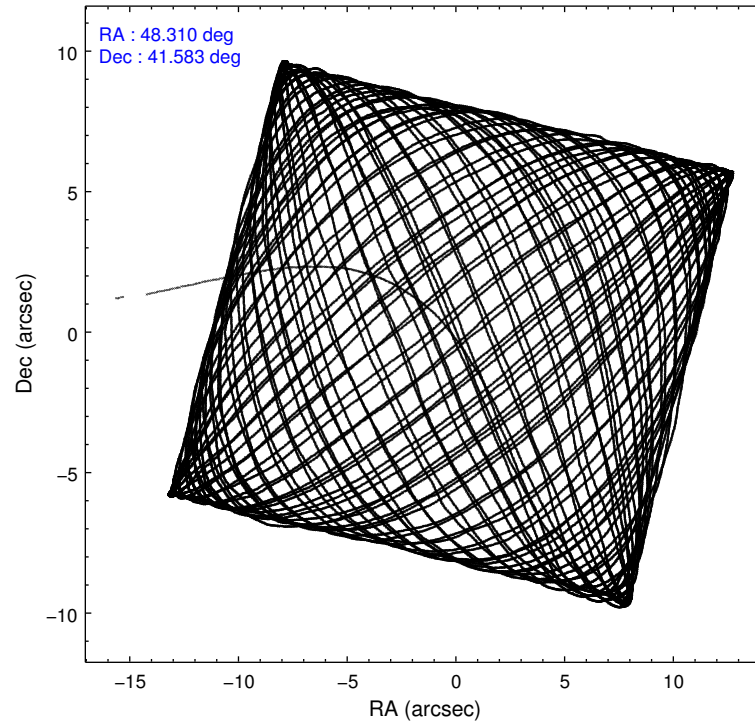
	ccd 0	ccd 1	ccd 2	ccd 3
level 1 events	245945	256646	282288	263674
rejected events	215146	217760	246980	234265
rejected %	87%	84%	87%	88%

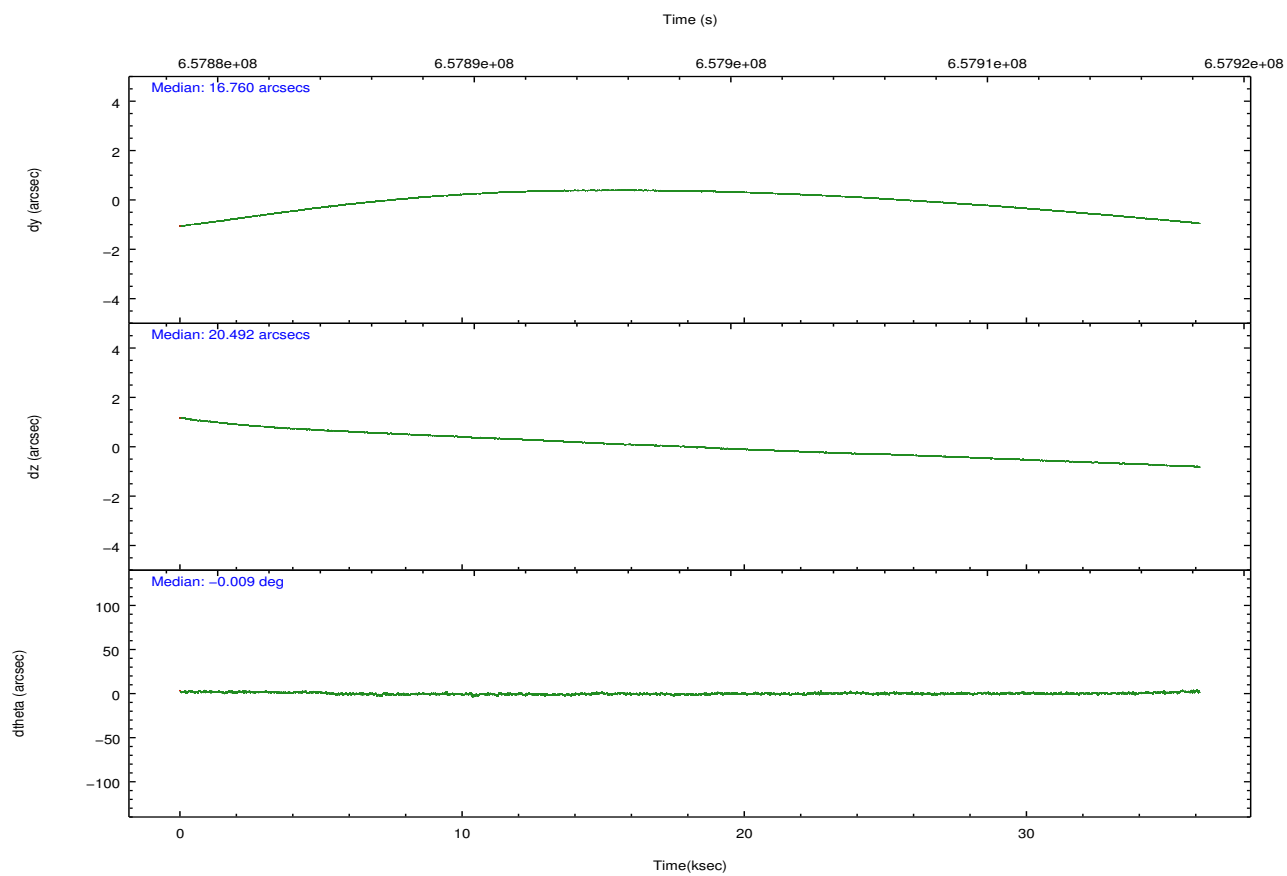
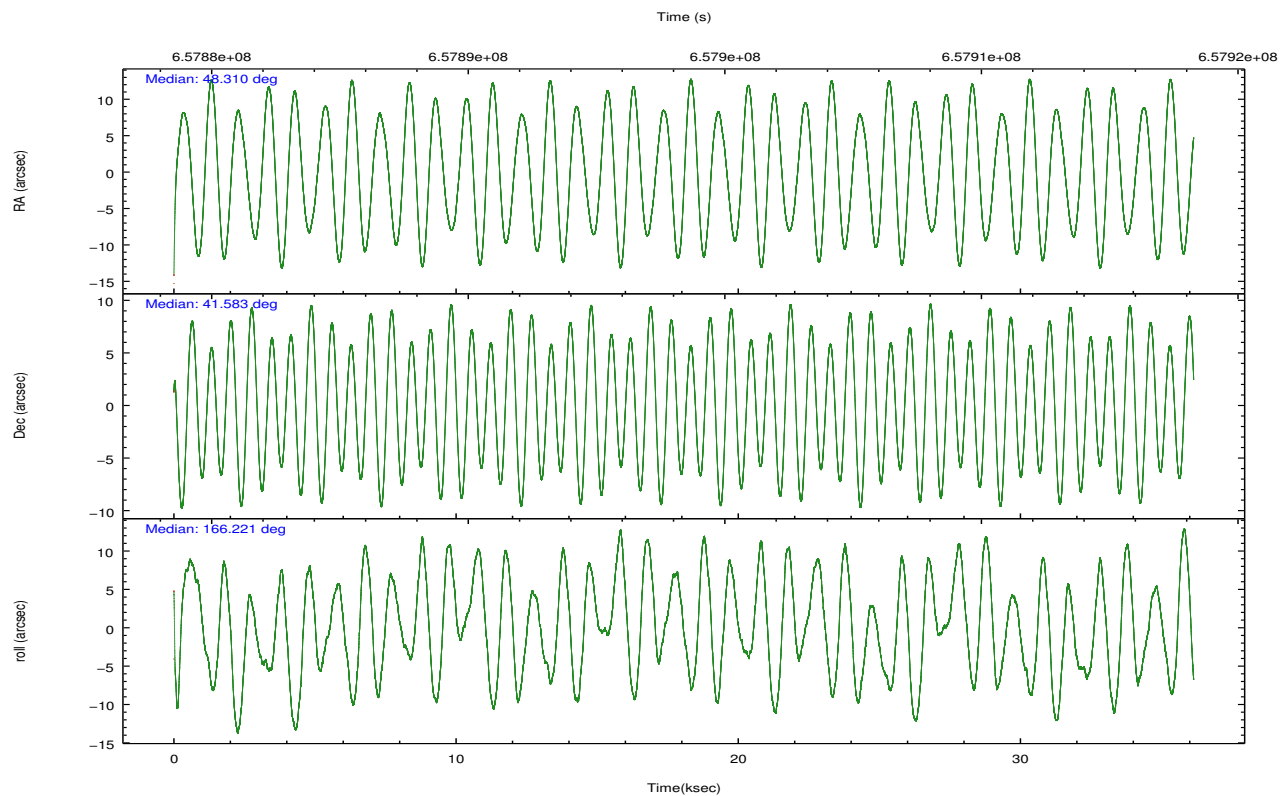
	ccd 0	ccd 1	ccd 2	ccd 3
grade 0 events	10753	16606	16172	11036
	4%	6%	5%	4%
grade 1 events	126	186	176	144
	0%	0%	0%	0%
grade 2 events	7590	8301	7246	6292
	3%	3%	2%	2%
grade 3 events	3028	3158	2842	3010
	1%	1%	1%	1%
grade 4 events	2881	3040	3014	2948
	1%	1%	1%	1%
grade 5 events	11583	11660	11138	12795
	4%	4%	3%	4%
grade 6 events	6554	7789	6037	6134
	2%	3%	2%	2%
grade 7 events	203430	205906	235663	221315
	82%	80%	83%	83%

2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar format version number	7	7
Detector	ACIS-0123	ACIS-0123	Obspar file type	PREDICTED	ACTUAL
Grating	NONE	NONE	Obspar update status	NONE	UPDATED
Data mode	VFAINT	VFAINT	Number of optional ACIS chips dropped	0	0
Observation mode	POINTING	POINTING	On-chip summing requested	N	N
[deg] Pointing RA	48.344817	48.30942065146662	Subarray requested	NONE	NONE
[deg] Pointing Dec	41.590397	41.58259186937126	Alternating exposures requested	N	N
[deg] Pointing Roll	165.984912	166.2170952652033	[s] Primary exposure time	0.000000	3.1
[mm] SIM focus pos	-0.782348	-0.7809083437167272			
[mm] SIM defocus	0	0.001439871863259334			
[mm] SIM translation stage pos	-233.592463	-233.5874344608287			
[mm] SIM translation stage offset	0	-0.005018542100998502			
[s] Observation start time (MET)	657880460.184000	657879670.8631001			
Observation start date	2018-11-06T08:33:11	2018-11-06T08:21:10			
[s] Observation end time (MET)	657916460.184000	657917090.54032			
Observation end date	2018-11-06T18:33:11	2018-11-06T18:44:50			
Read mode	TIMED	TIMED			

2.3 Aspect



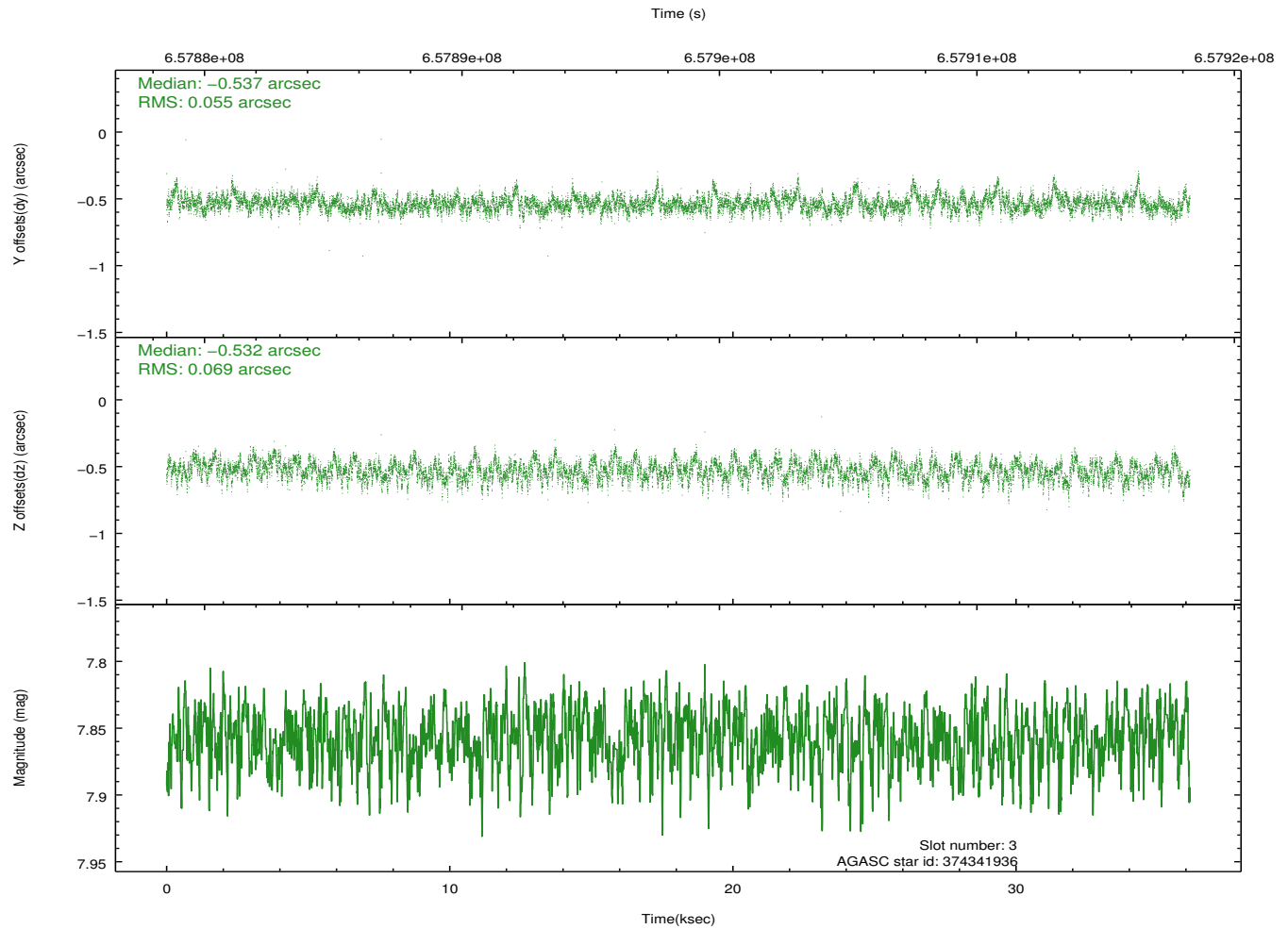
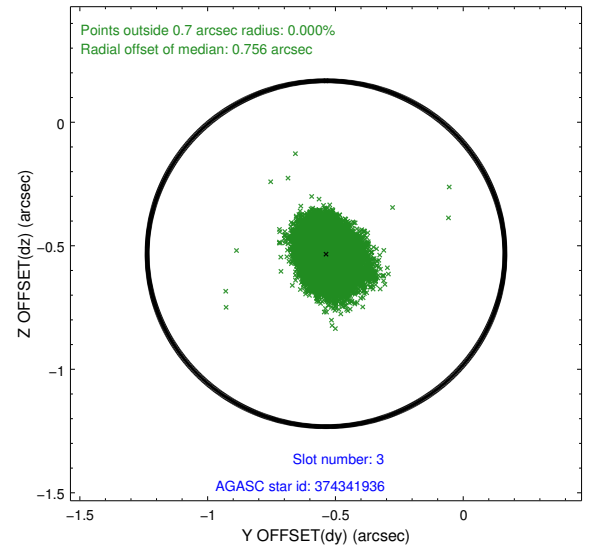
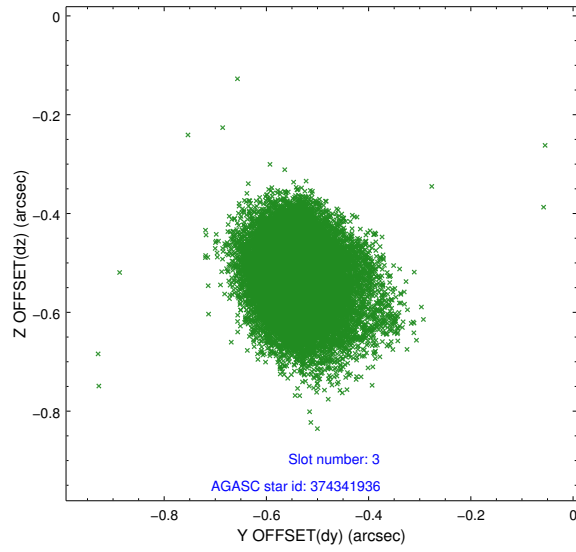


Slot Statistics

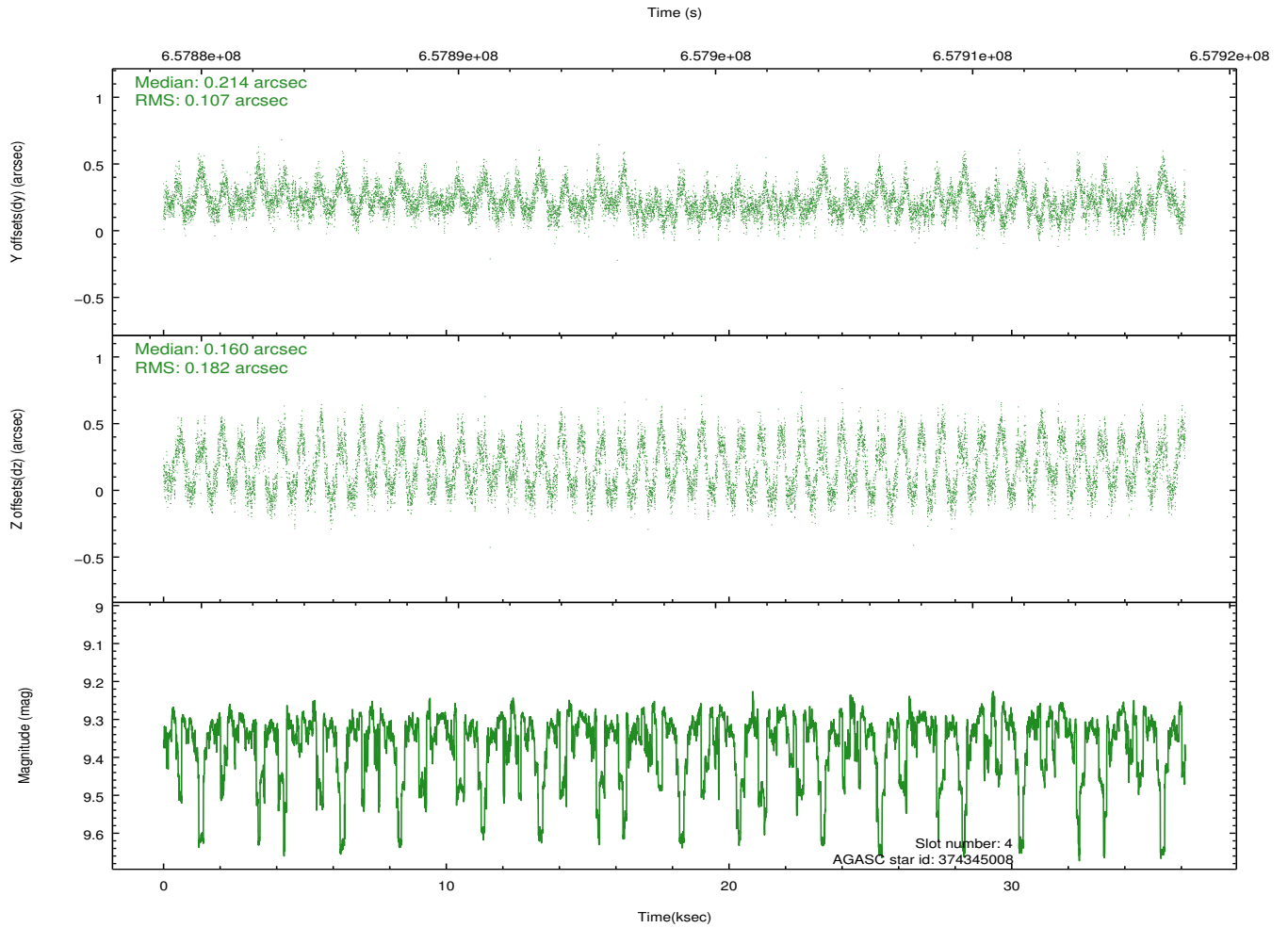
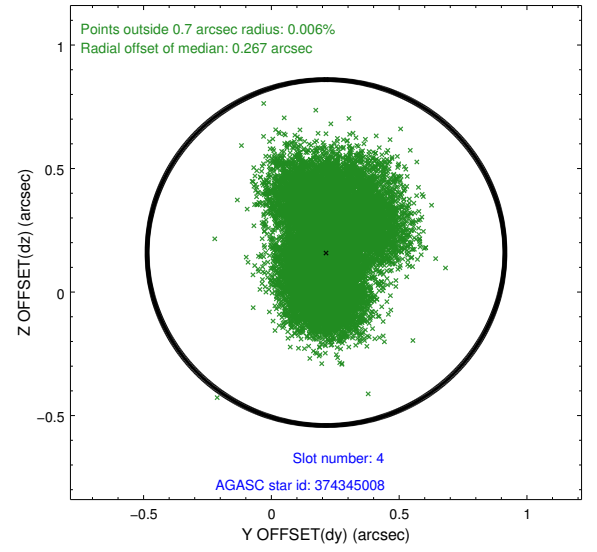
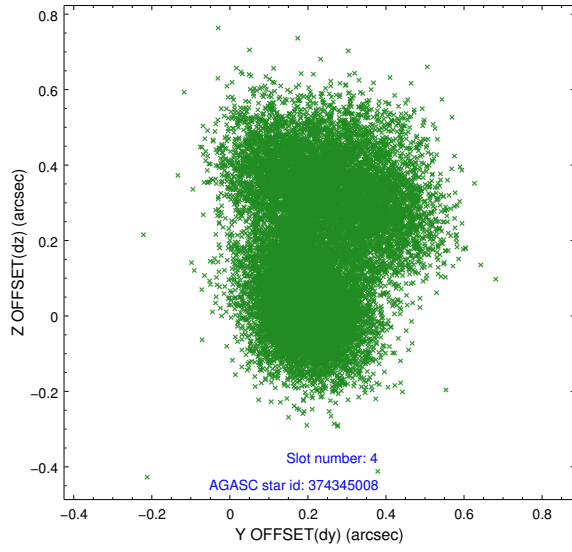
pt	status	used	id	mag	n_pts	frac_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mea
0	FID		ACIS-I-2	7.08	8815	1.000	-0.373	-0.111	0.021	0.036	0.000000	0.000000	-771.69	-850
1	FID		ACIS-I-4	7.12	8812	1.000	0.813	0.220	0.020	0.067	0.000000	0.000000	2143.31	1055
2	FID		ACIS-I-5	7.18	8814	1.000	-0.539	-0.038	0.026	0.061	0.000000	0.000000	-1825.85	1053
3	GUIDE	used	374341936	7.86	17622	1.000	-0.537	-0.532	0.094	0.151	47.693096	41.597853	1710.72	392
4	GUIDE	used	374345008	9.34	17600	1.000	0.214	0.160	0.230	0.348	48.768668	41.619367	-1080.81	-378
5	GUIDE	used	374353904	8.32	17617	1.000	-0.439	-0.319	0.212	0.306	48.175092	41.439059	312.27	639
6	GUIDE	used	374359480	8.73	17609	1.000	0.175	0.074	0.137	0.231	48.054064	42.164482	1254.05	-1817
7	GUIDE	used	374358688	9.24	17606	1.000	0.574	0.607	0.184	0.287	49.259903	42.100043	-1923.05	-2383

2.4 Star Slots

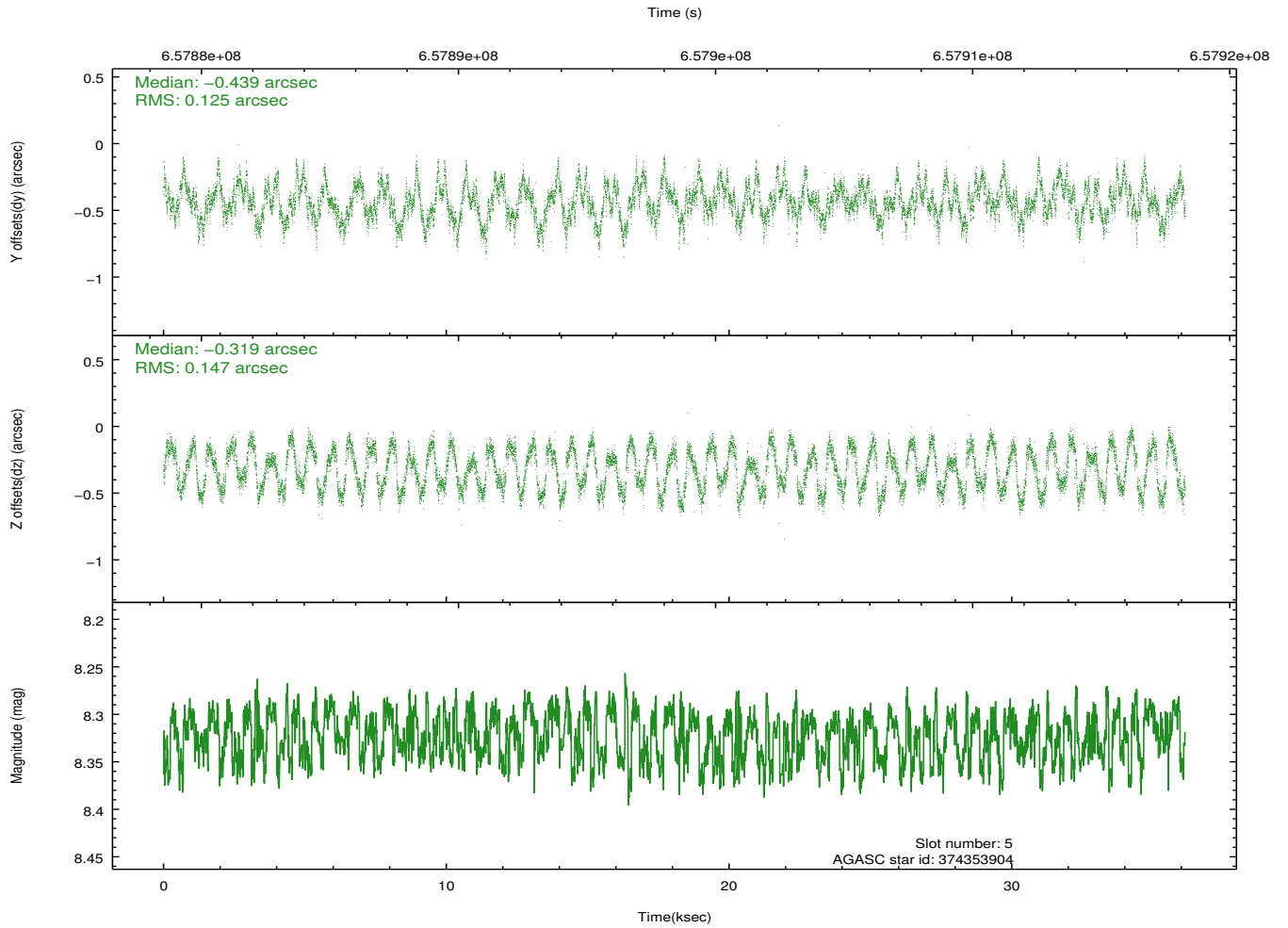
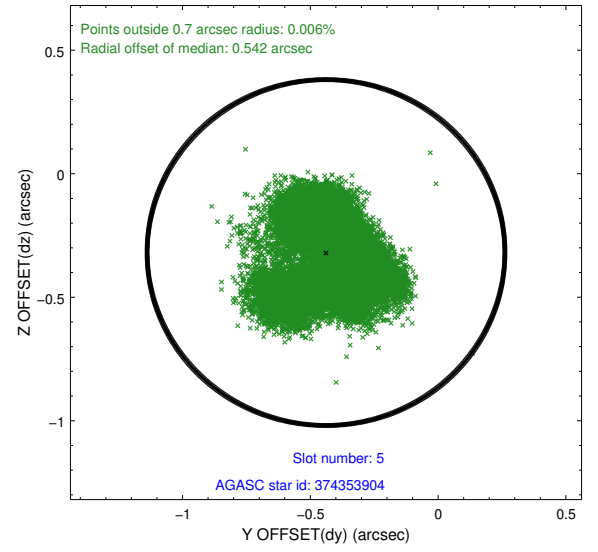
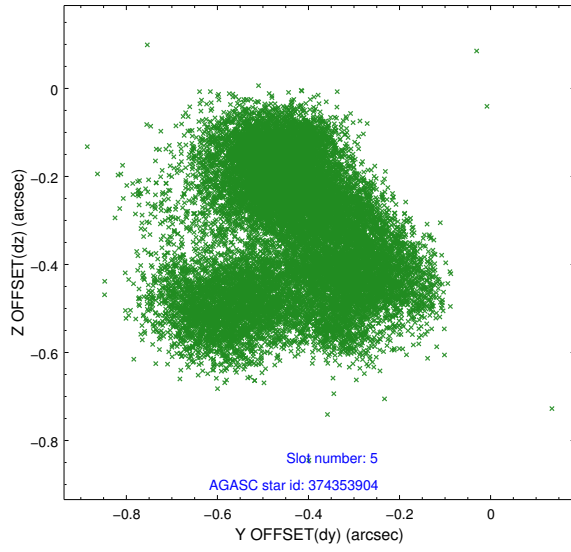
2.4.1 Slot 3



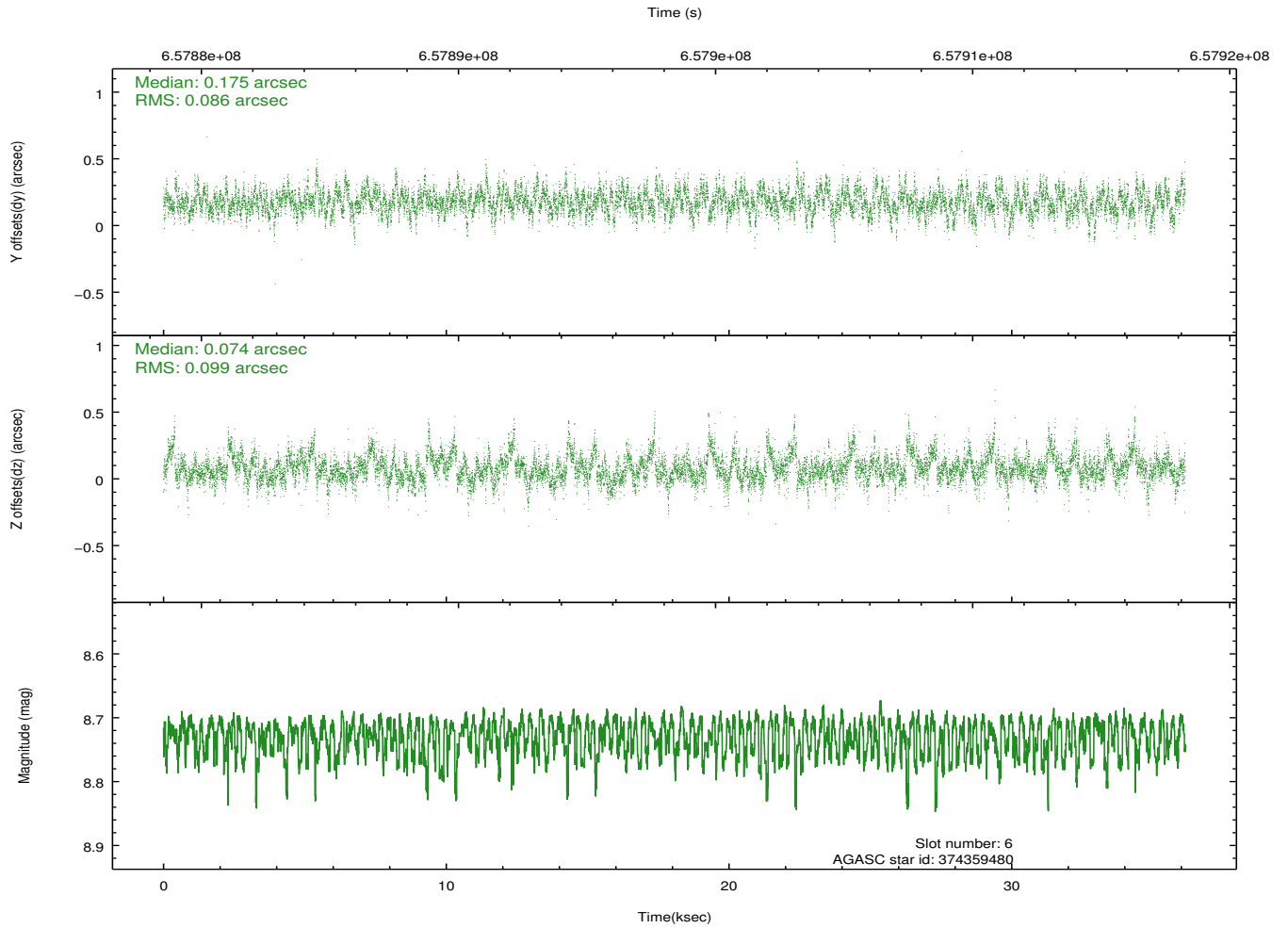
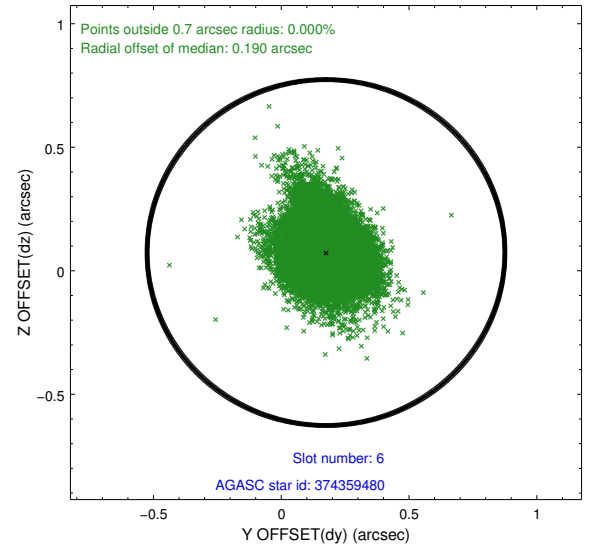
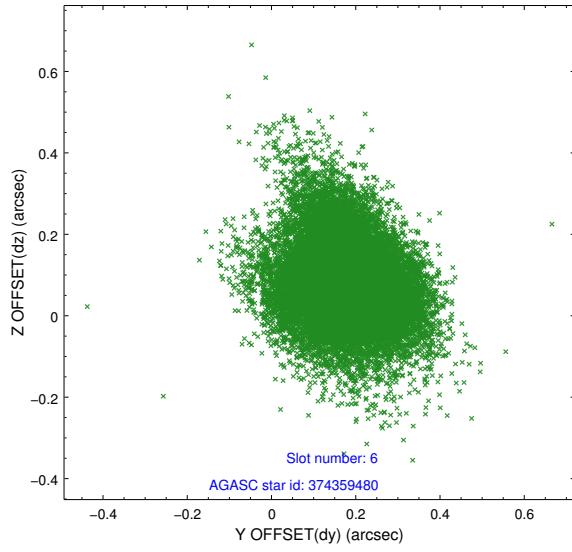
2.4.2 Slot 4



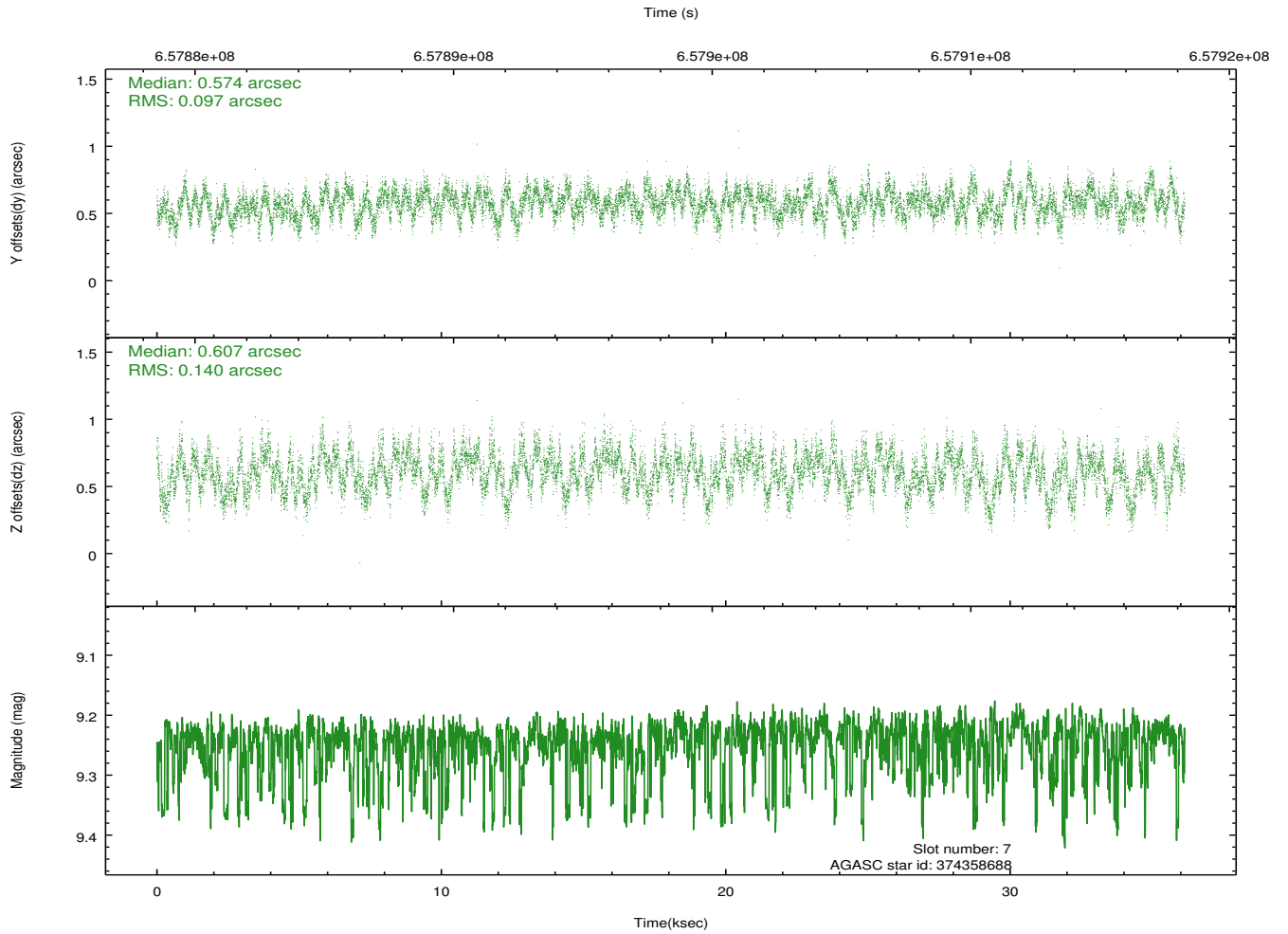
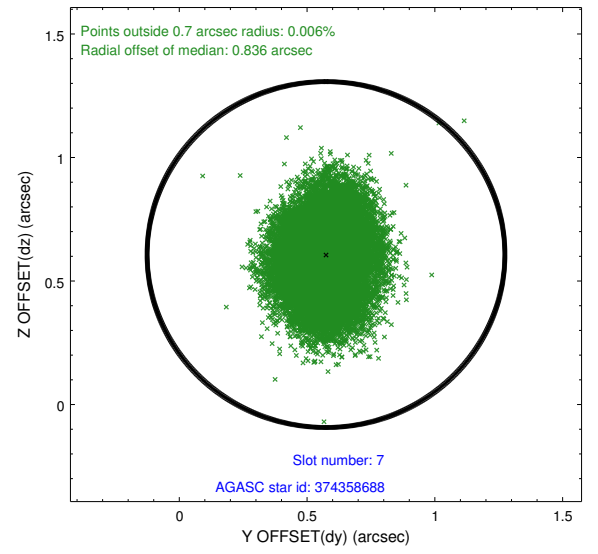
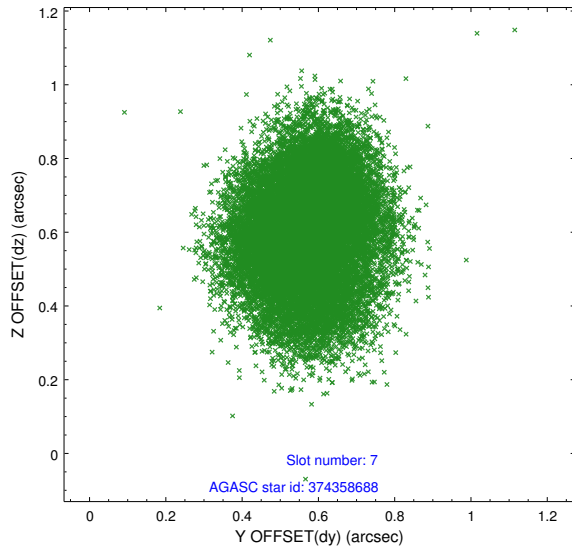
2.4.3 Slot 5



2.4.4 Slot 6

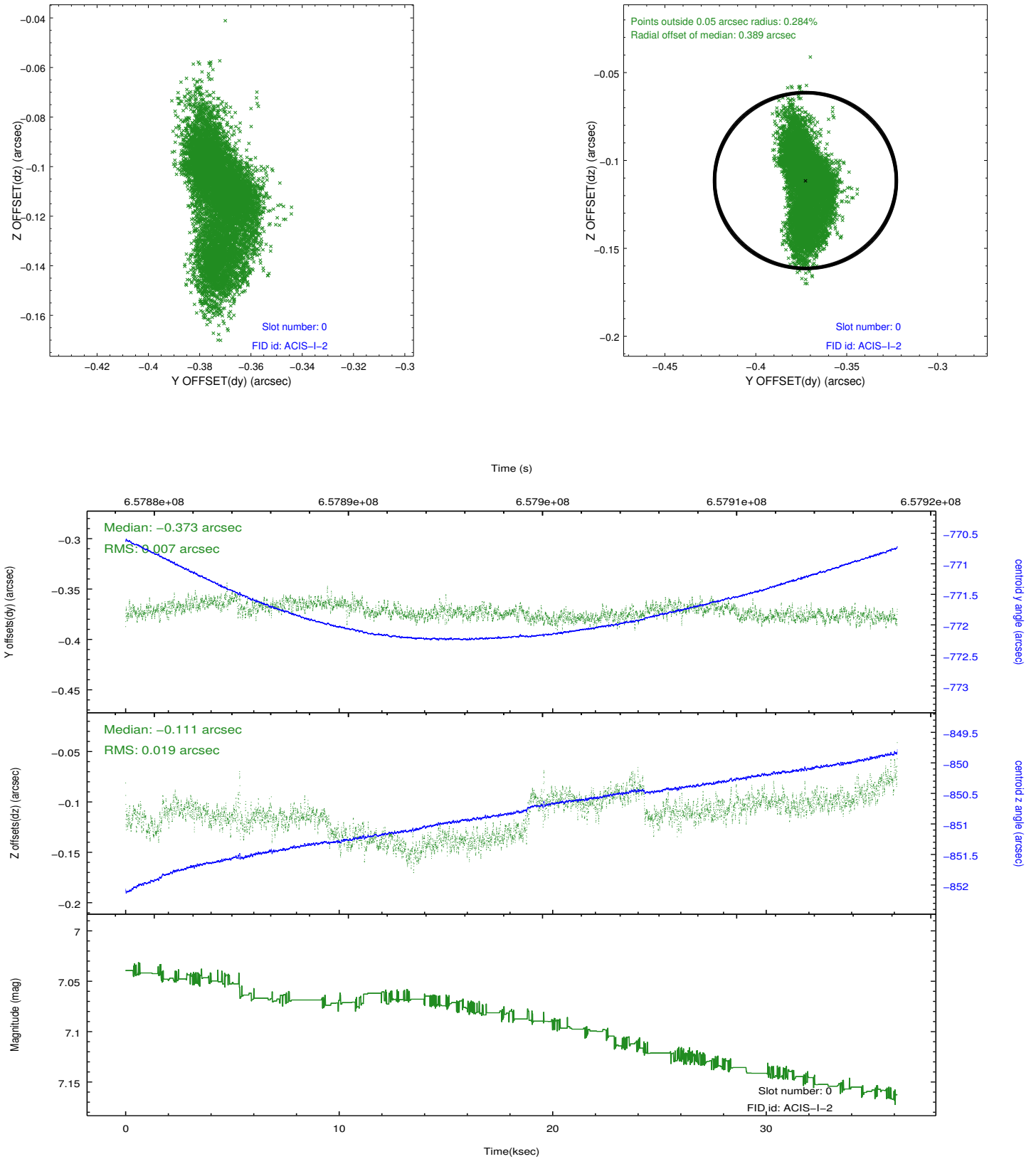


2.4.5 Slot 7

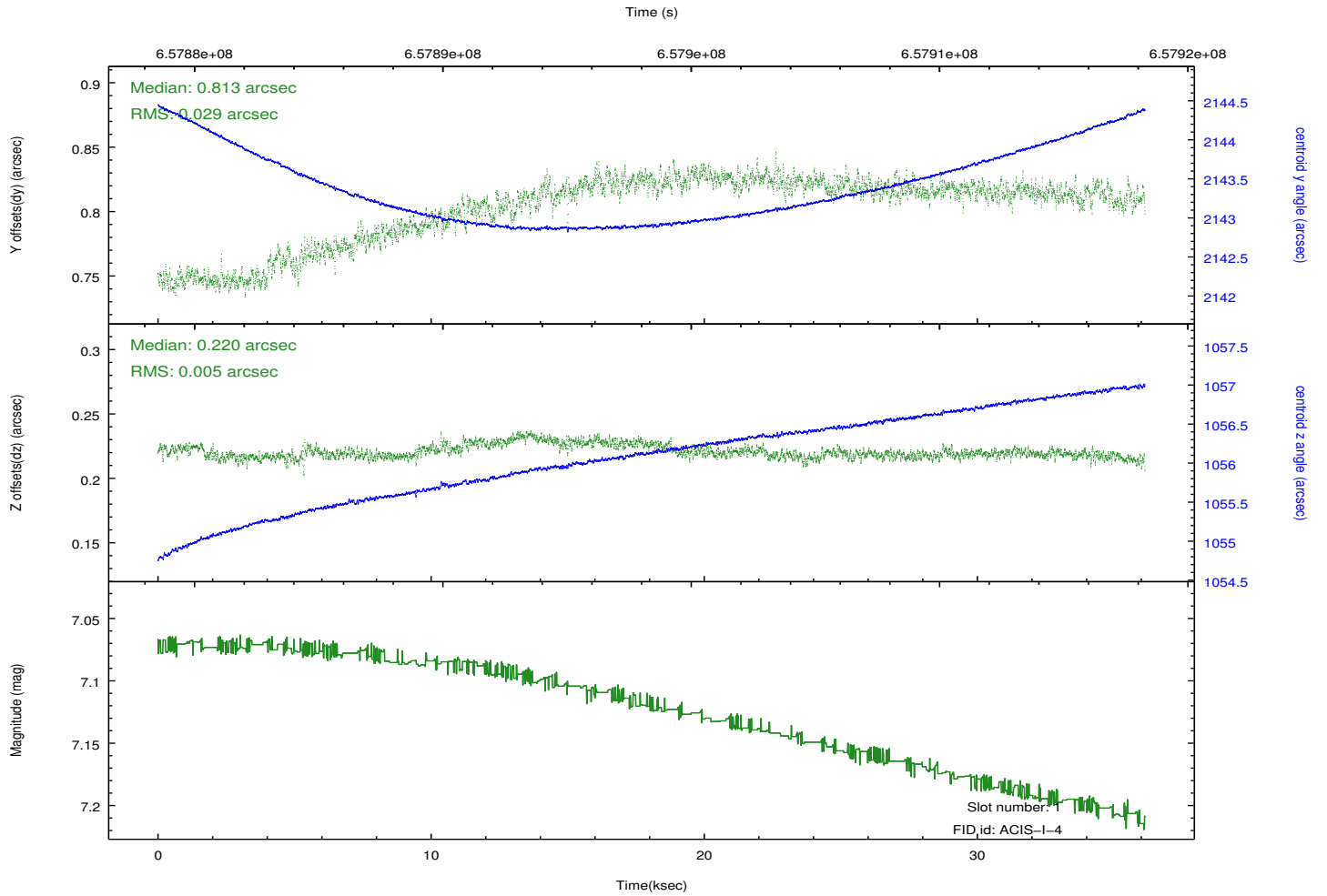
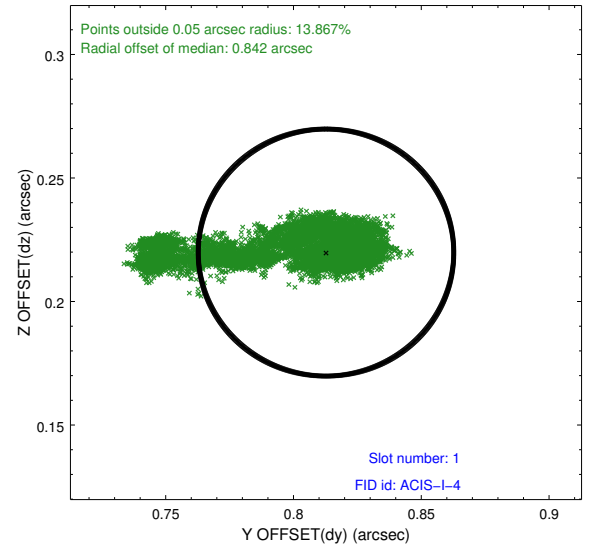
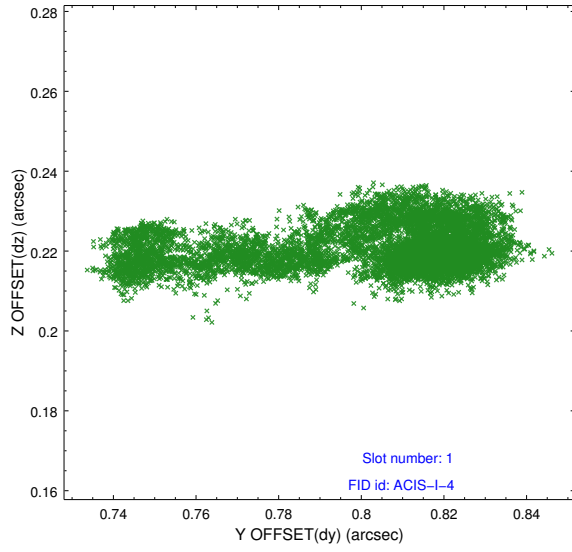


2.5 FID Slots

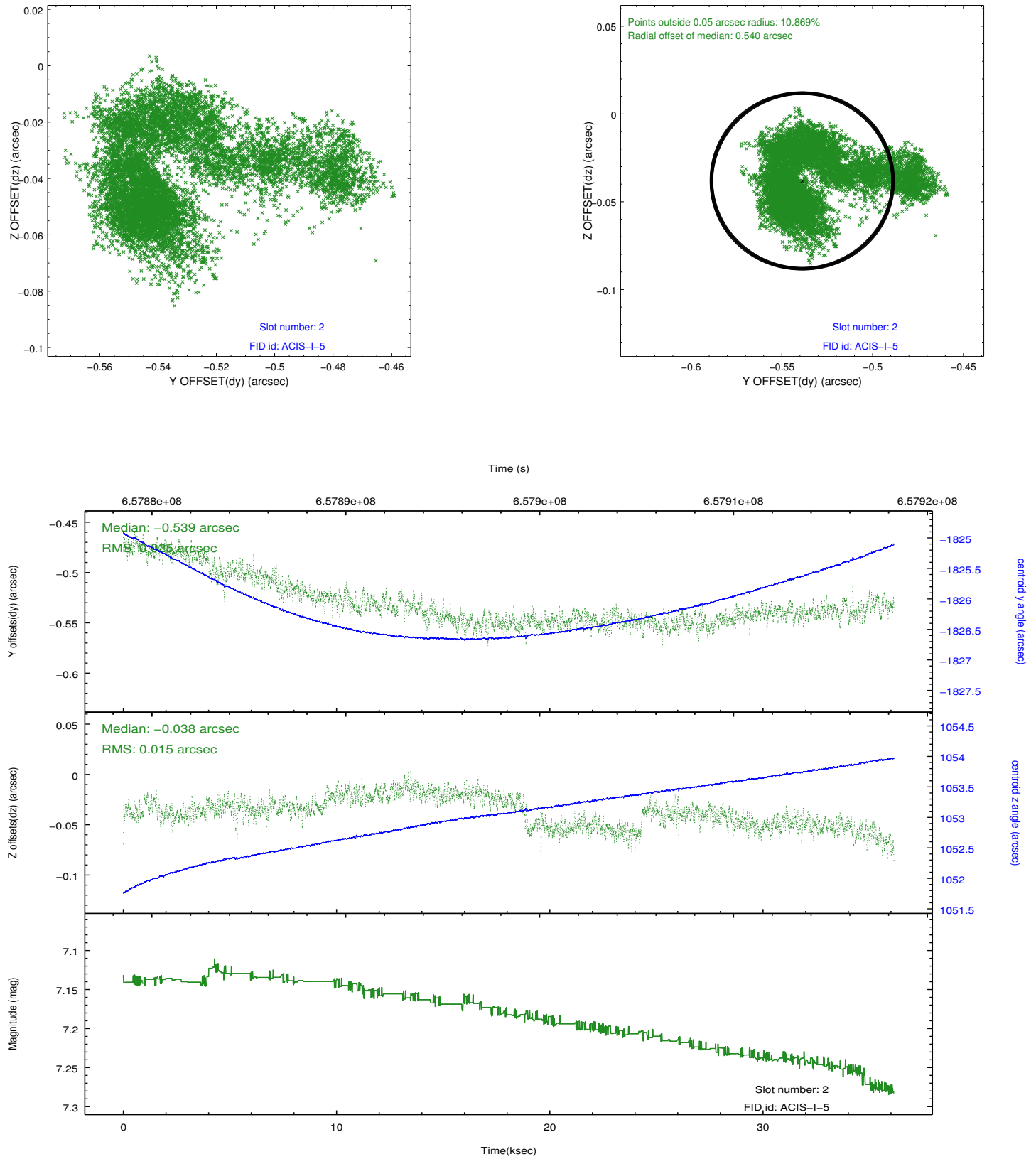
2.5.1 Slot 0



2.5.2 Slot 1



2.5.3 Slot 2



A Summary

A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2018.11.08
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	36.076340953469

A.2 Comments

The focal plane temperature during the last ~1.5 ks of this observation was warmer than the upper limit for optimum calibration of the ACIS gain and spectral resolution (i.e., -114.0 C for ACIS-I and -112.0 C for ACIS-S).

The Chandra calibration team calibrates the ACIS gain and spectral resolution using data from the external calibration source (ECS). ECS data show that the frontside-illuminated (FI) CCDs are more temperature sensitive than the backside-illuminated (BI) CCDs.

A summary of the current calibration status of the ACIS gain and spectral resolution can be found at:

http://asc.harvard.edu/cal/Acis/Cal_prods/Gain_and_Spectral_Resolution/ACIS_response_summary.html

The main points are:

- 1) The gain on BI chips remains within 0.3% (i.e., the systematic uncertainty in the ACIS gain quoted on the Chandra Calibration Status Summary web page) at all measured temperatures.
 - 2) The gain on FI chips remains within 0.3% below row 600 at all measured temperatures.
 - 3) The gain on FI chips above row 600 can be underestimated by as much as 1% for focal plane temperatures exceeding -116 C.
 - 4) The spectral resolution (i.e., FWHM) on BI chips is insensitive to the focal plane temperature.
 - 5) Warmer focal plane temperatures increase the FWHM on FI chips by up to 30 eV near row 512 and by up to 70 eV near the top of the chips.
- In summary, the user should be cautious in the spectral analysis of high S/N emission lines detected on the top half of FI chips in this observation. Default processing with the current version of the CALDB will underestimate photon energies by up to 1% and broaden emission lines by up to 70 eV.