

V&V Reference Report

L2 ASCDS Version : 10.6

Observation 19564 - L2 Version 1
Chandra X-Ray Center

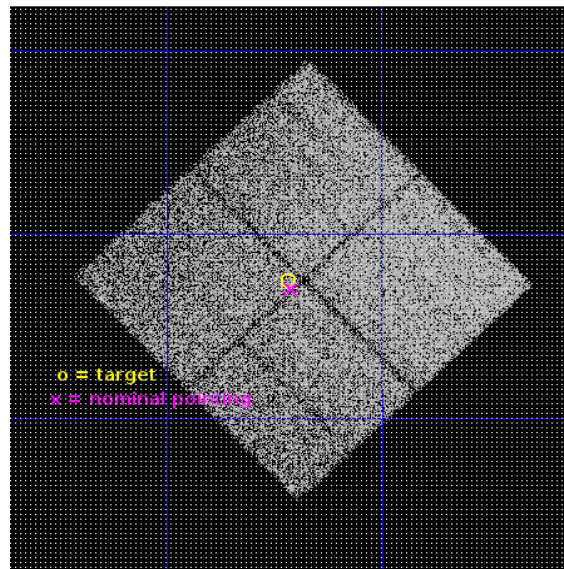
L2 Processing Date : Dec 8 2017

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1 Front

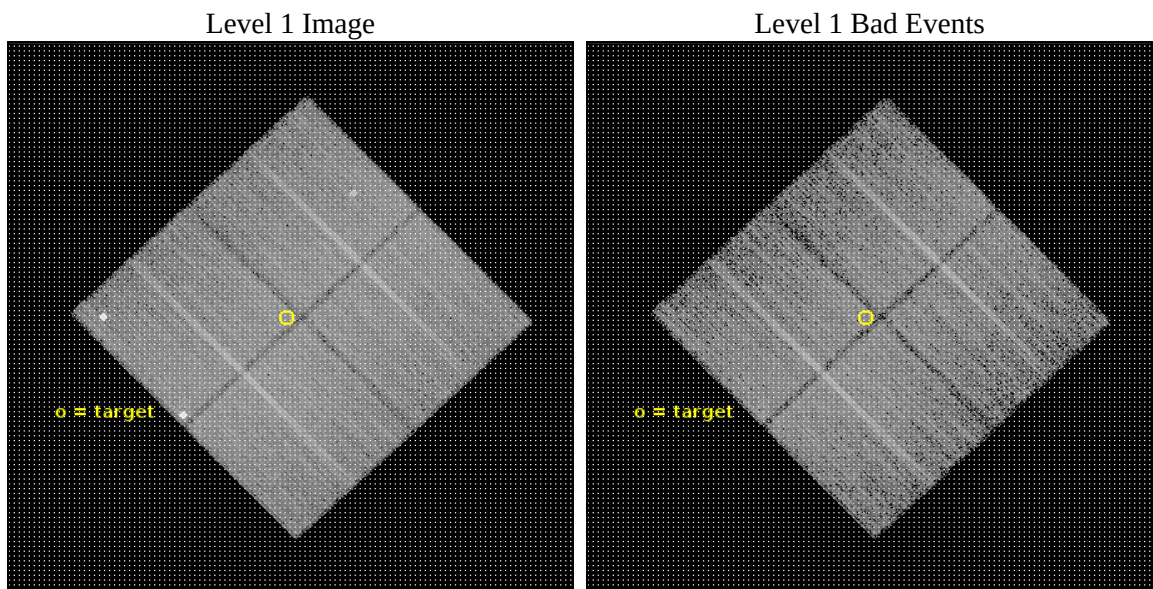
seq_num	801657	Sequence number
obs_id	19564	Observation id
title	A detailed study of the colossal 700 kpc radius cold front in the Perseus cluster	Proposal title
observer	Stephen Walker	Principal investigator
object	Perseus cold front 1	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	50.607917	Observer's specified target RA [deg]
dec_targ	41.458417	Observer's specified target Dec [deg]
ra_nom	50.604897316937	Nominal RA [deg]
dec_nom	41.450776283623	Nominal Dec [deg]
roll_nom	226.21068648023	Nominal Roll [deg]
revision	1	Processing version of data
ontime	20075.140600562	Sum of GTIs [s]
livetime	19812.844109512	Livetime [s]
ontime0	20078.158540845	Sum of GTIs [s]
ontime1	20078.199580789	Sum of GTIs [s]
ontime2	20075.099560618	Sum of GTIs [s]
ontime3	20075.140600562	Sum of GTIs [s]
l2events	86061	Number of level 2 events



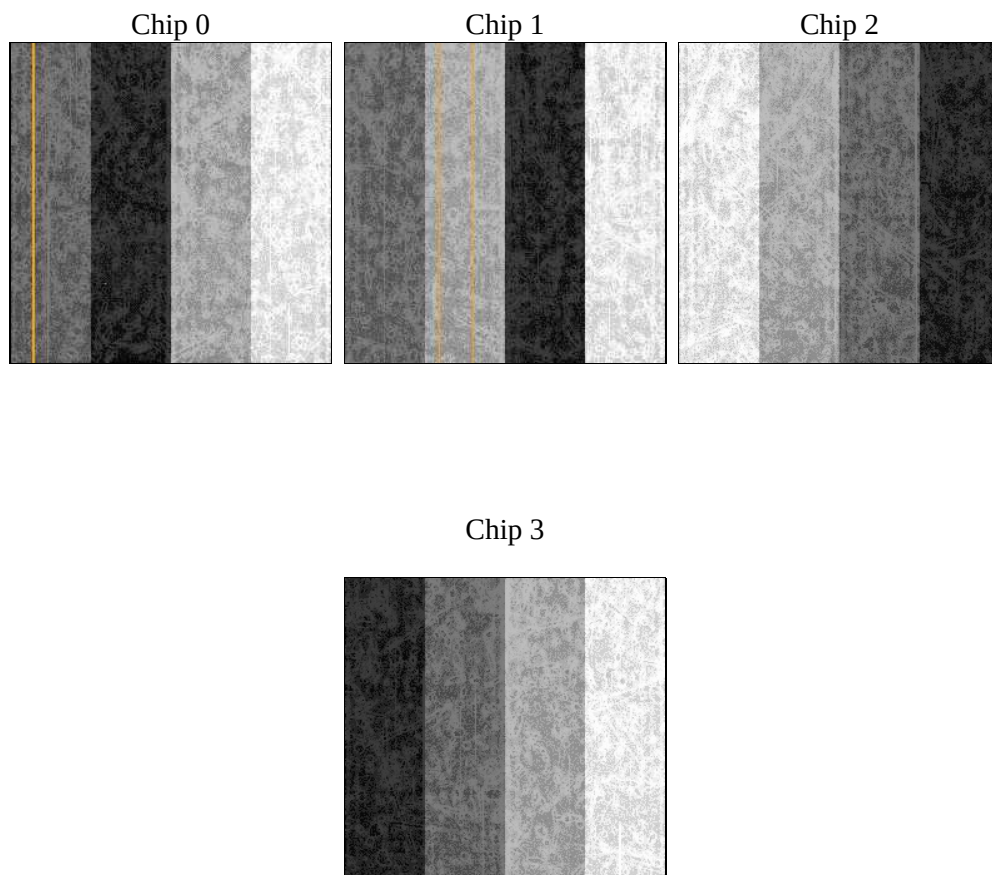
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	20000.000000	[s] Scheduled observation exposure time
ascdsver	10.6	Processing system revision	ontime	20075.140600562	Sum of GTIs [s]
caldsver	4.7.6	 	ontime0	20078.158540845	Sum of GTIs [s]
date	2017-12-08T05:34:05	Date and time of file creation	ontime1	20078.199580789	Sum of GTIs [s]
revision	1	Processing version of data	ontime2	20075.099560618	Sum of GTIs [s]
			ontime3	20075.140600562	Sum of GTIs [s]
			l1events	612675	Number of level 1 events

2.1.4 Events

	ccd 0	ccd 1	ccd 2	ccd 3
level 1 events	152800	144601	157066	158208
rejected events	119077	118539	135454	127948
rejected %	77%	81%	86%	80%

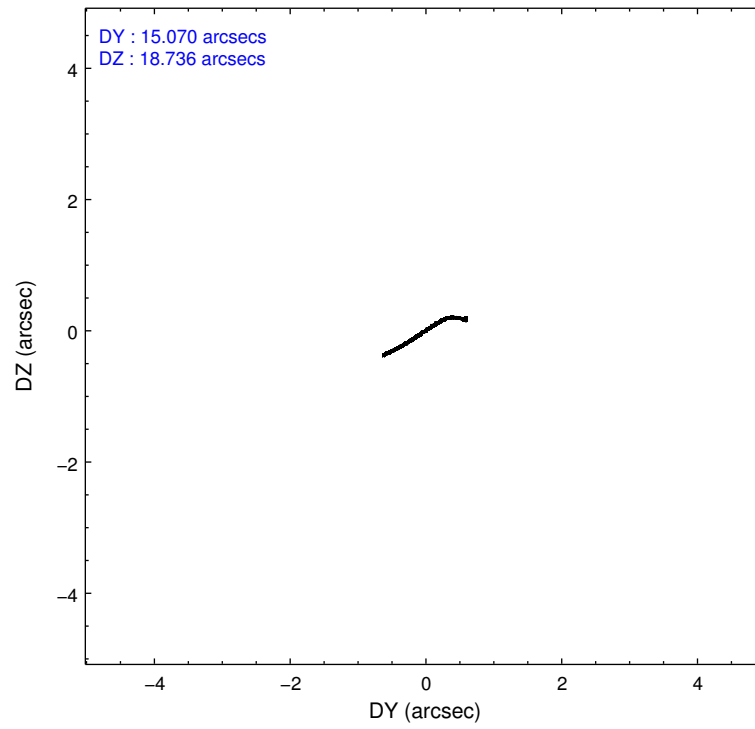
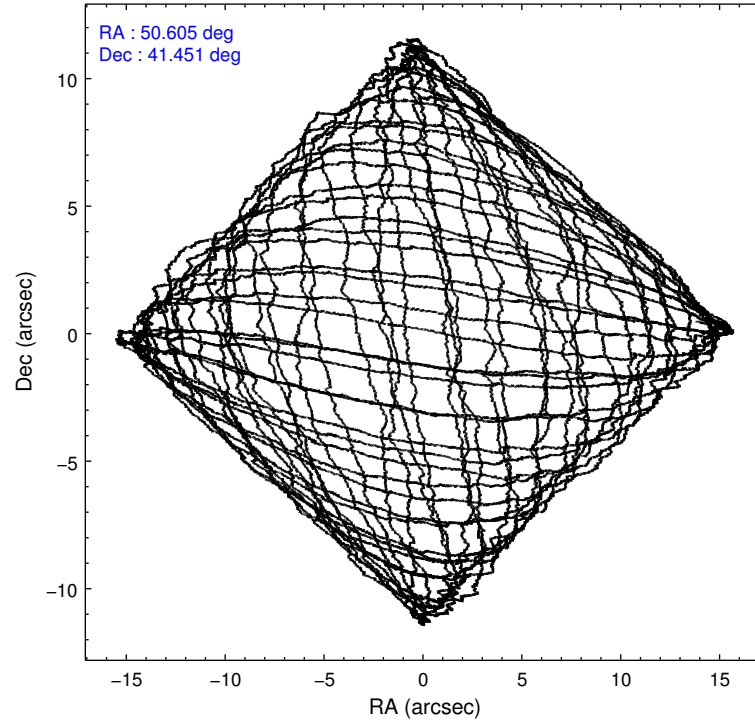
	ccd 0	ccd 1	ccd 2	ccd 3
grade 0 events	19271	12598	10631	13736
	12%	8%	6%	8%
grade 1 events	142	93	118	99
	0%	0%	0%	0%
grade 2 events	6041	5465	4321	9730
	3%	3%	2%	6%
grade 3 events	2192	1848	1661	1676
	1%	1%	1%	1%
grade 4 events	2171	1783	1796	1723
	1%	1%	1%	1%
grade 5 events	5767	5981	5545	6708
	3%	4%	3%	4%
grade 6 events	4059	4372	3209	3404
	2%	3%	2%	2%
grade 7 events	113157	112461	129785	121132
	74%	77%	82%	76%

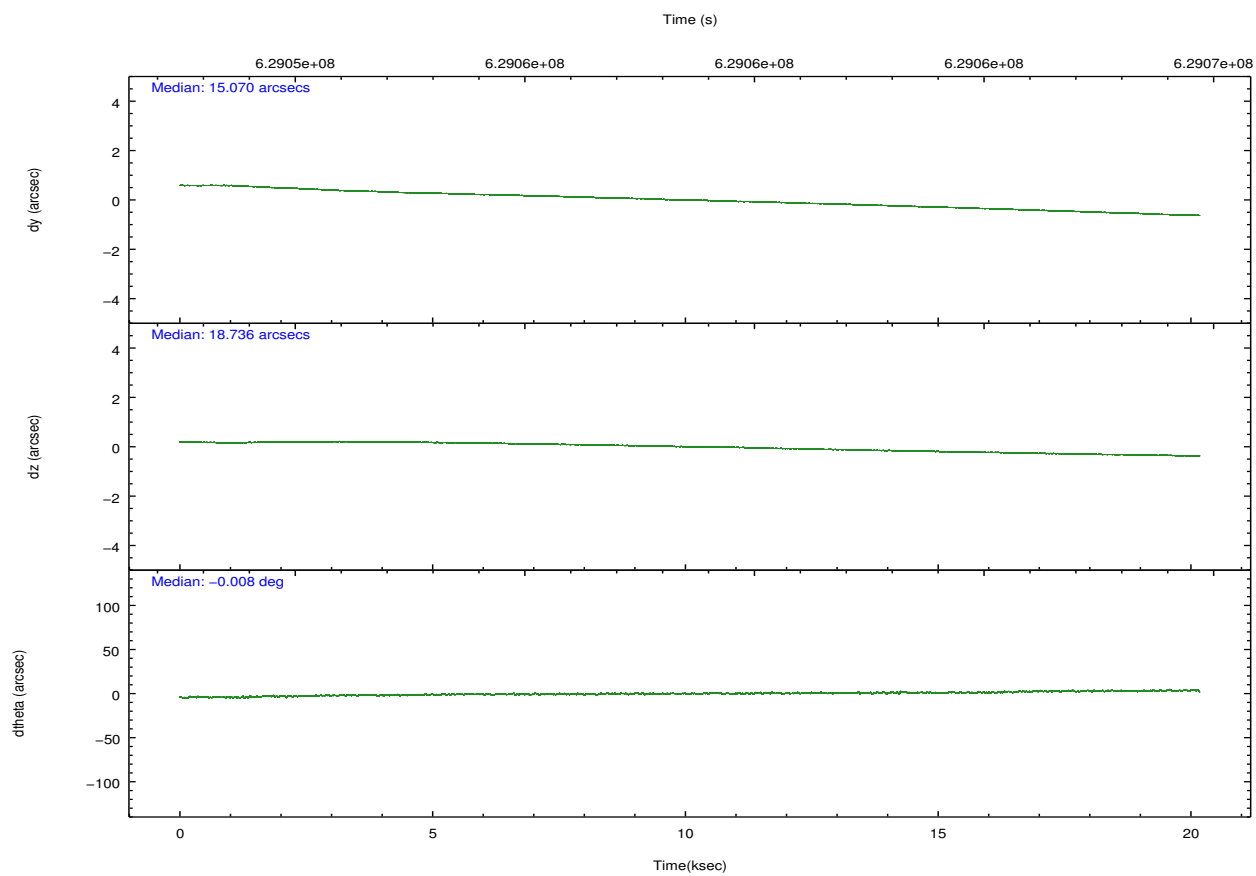
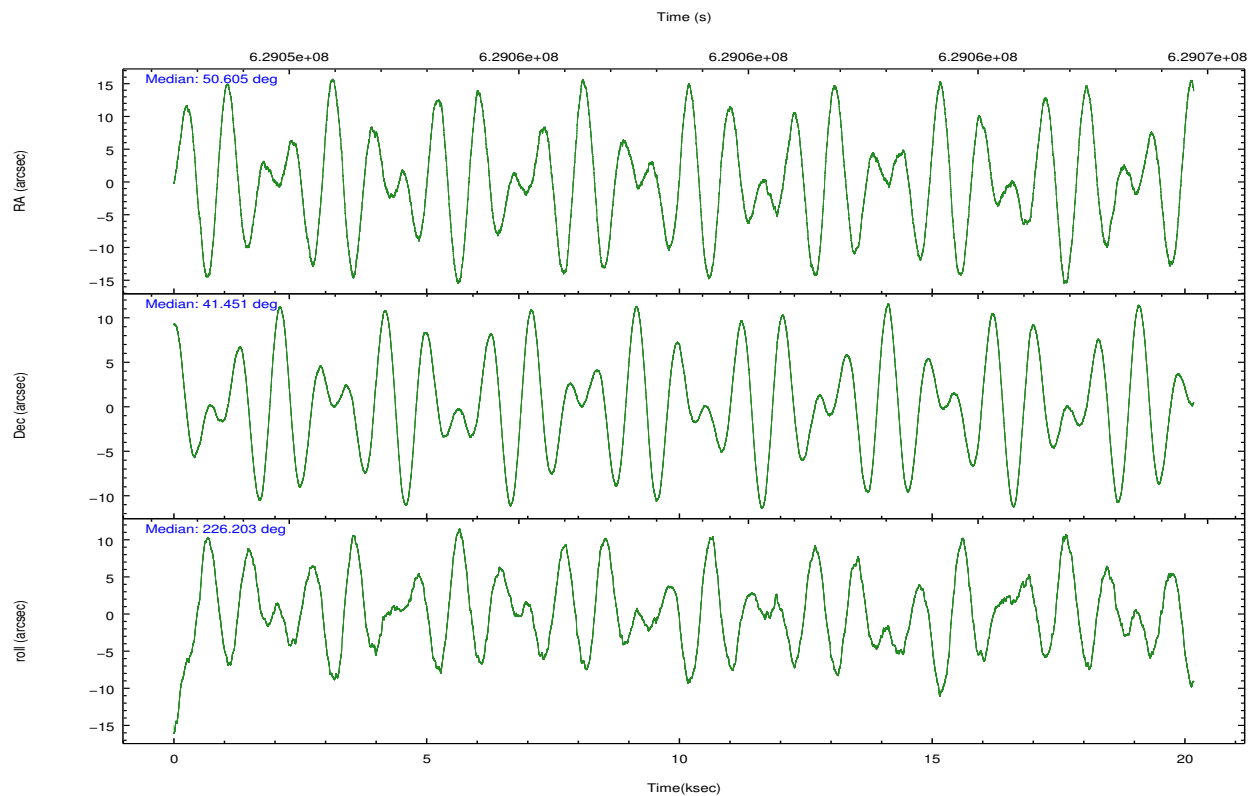
2.2 Compared Parameters

Parameter	Planned	Actual
Instrument	ACIS	ACIS
Detector	ACIS-0123	ACIS-0123
Grating	NONE	NONE
Data mode	VFAINT	VFAINT
Observation mode	POINTING	POINTING
[deg] Pointing RA	50.613517	50.60489731693708
[deg] Pointing Dec	41.477602	41.45077628362303
[deg] Pointing Roll	225.996294	226.2106864802294
[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)	629048676.184000	629047637.80337
Observation start date	2017-12-07T15:43:27	2017-12-07T15:27:17
[s] Observation end time (MET)	629068676.184000	629069449.8046499
Observation end date	2017-12-07T21:16:47	2017-12-07T21:30:49
Read mode	TIMED	TIMED

Parameter	Planned	Actual
Obspar format version number	7	7
Obspar file type	PREDICTED	ACTUAL
Obspar update status	NONE	UPDATED
CCD I0 on	Y	Y
CCD I1 on	Y	Y
CCD I2 on	Y	Y
CCD I3 on	Y	Y
CCD S0 on	N	N
CCD S1 on	N	N
CCD S2 on	O1	N
CCD S3 on	N	N
CCD S4 on	N	N
CCD S5 on	N	N
Number of optional ACIS chips dropped	1	1
On-chip summing requested	N	N
Subarray requested	NONE	NONE
Alternating exposures requested	N	N
[s] Primary exposure time	0.000000	3.1

2.3 Aspect



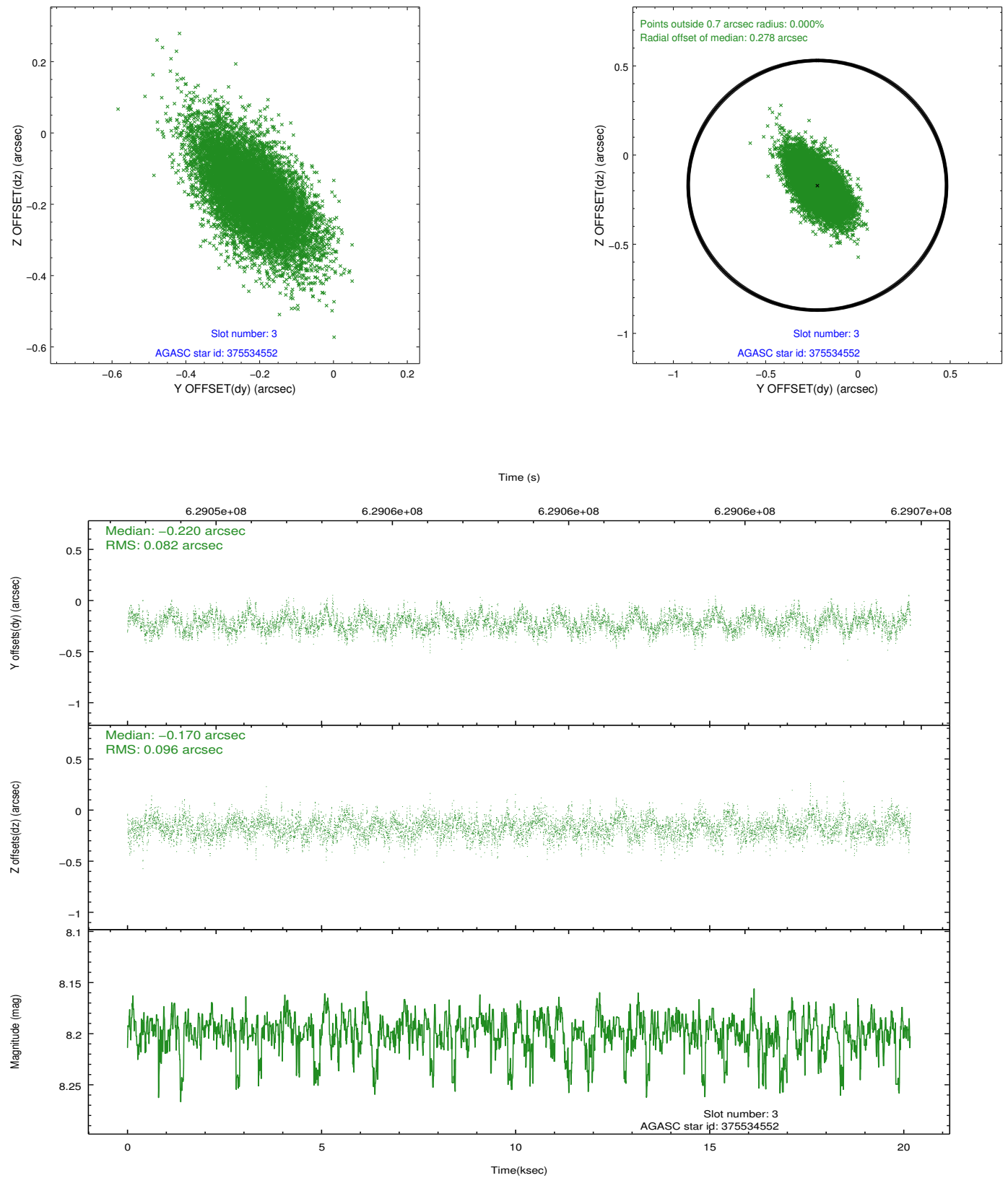


Slot Statistics

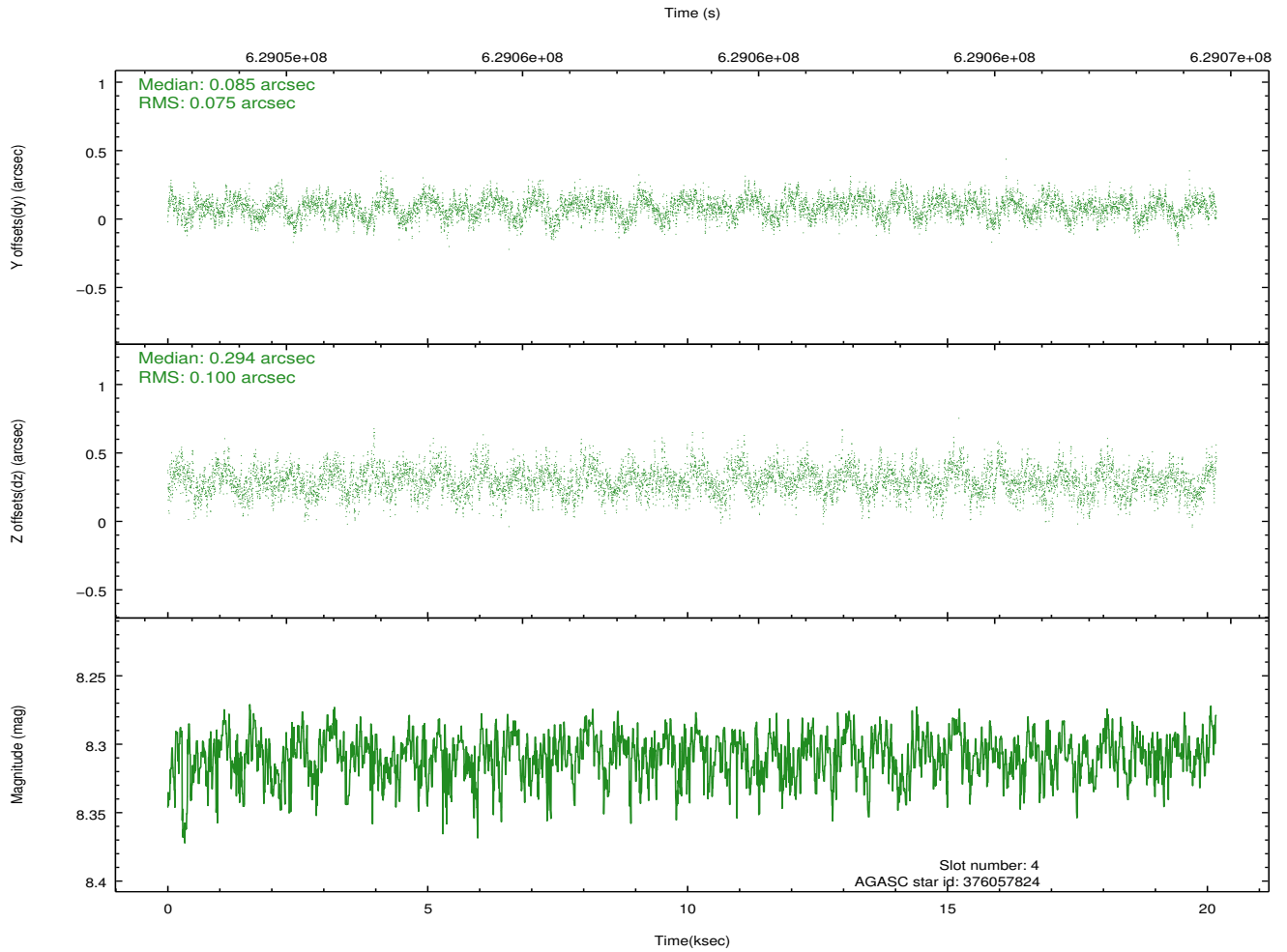
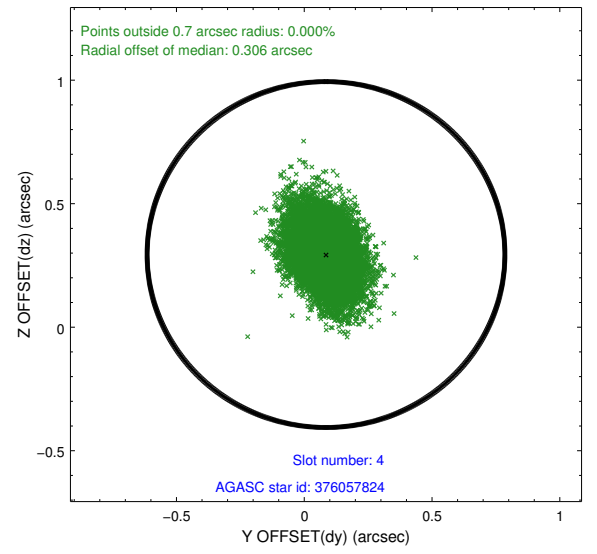
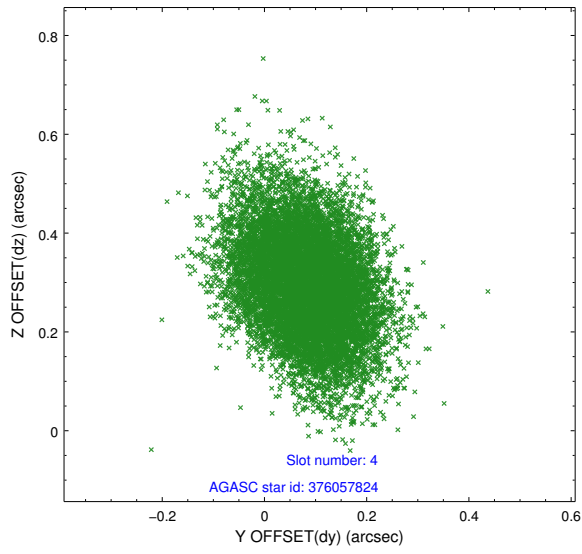
slot	status	used	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID		ACIS-I-1	7.18	4921	0.183	-0.051	0.012	0.022	0.000000	0.000000	924.67	-842.36
1	FID		ACIS-I-2	7.09	4920	-0.136	0.021	0.013	0.025	0.000000	0.000000	-769.63	-849.01
2	FID		ACIS-I-5	7.18	4921	-0.141	0.102	0.010	0.018	0.000000	0.000000	-1824.21	1054.88
3	GUIDE	used	375534552	8.20	9837	-0.220	-0.170	0.130	0.229	50.877490	41.206927	203.71	1190.99
4	GUIDE	used	376057824	8.31	9836	0.085	0.294	0.132	0.217	50.665569	41.926280	-1257.87	-1020.64
5	GUIDE	used	376070040	8.39	9839	0.111	0.226	0.119	0.204	50.072031	41.897206	-81.05	-2095.64
6	GUIDE	used	376070440	6.96	9841	-0.047	-0.171	0.132	0.220	51.289107	41.257301	-704.68	1860.63
7	GUIDE	used	373826120	8.87	9834	0.081	-0.177	0.170	0.282	49.738165	41.186341	2393.69	-985.27

2.4 Star Slots

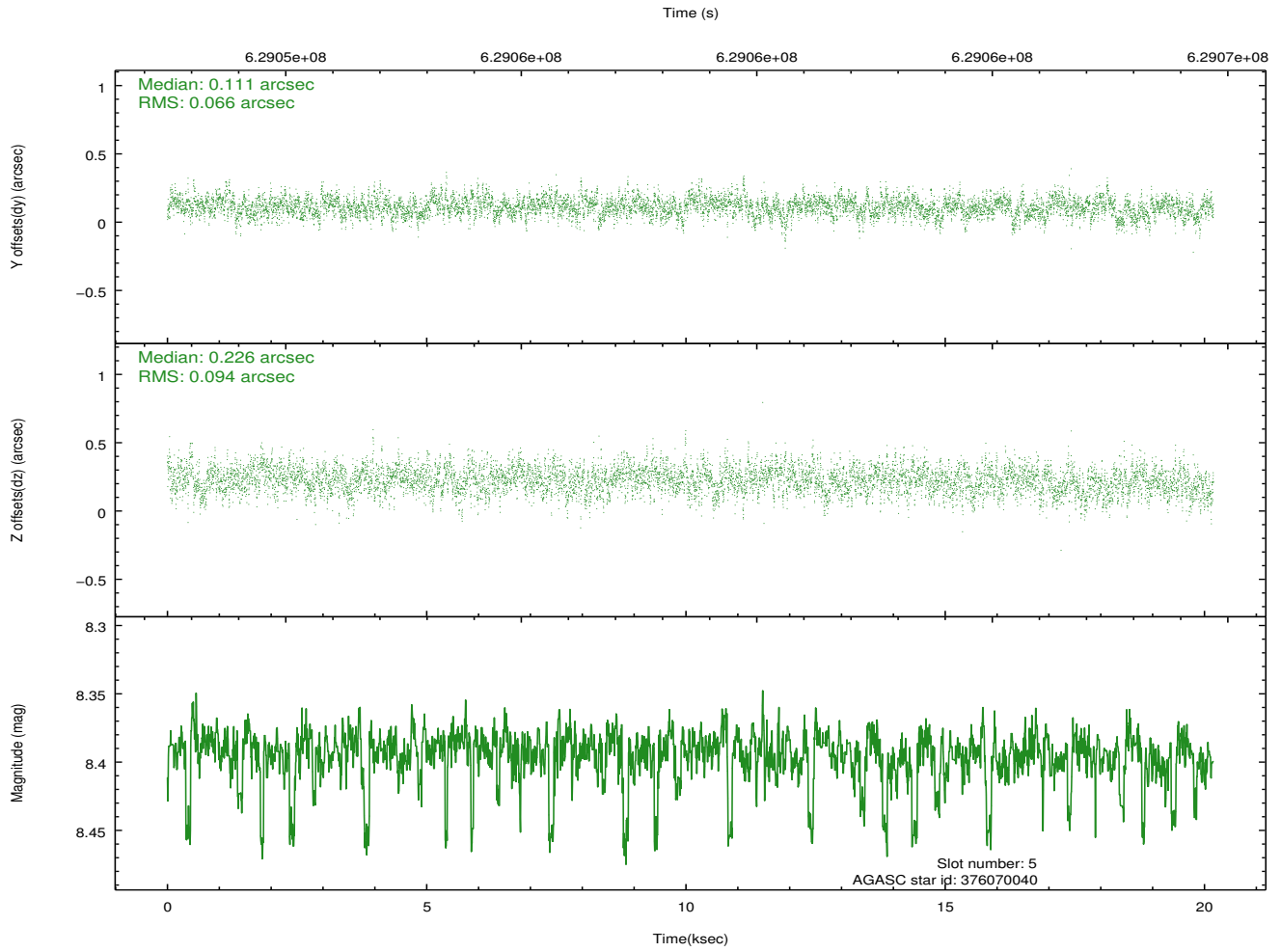
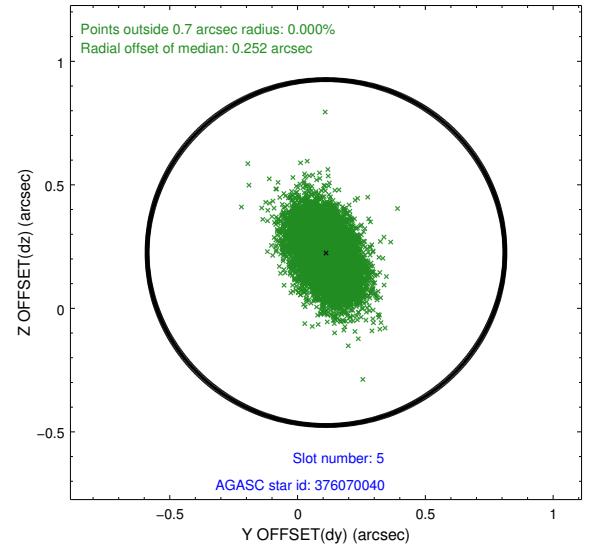
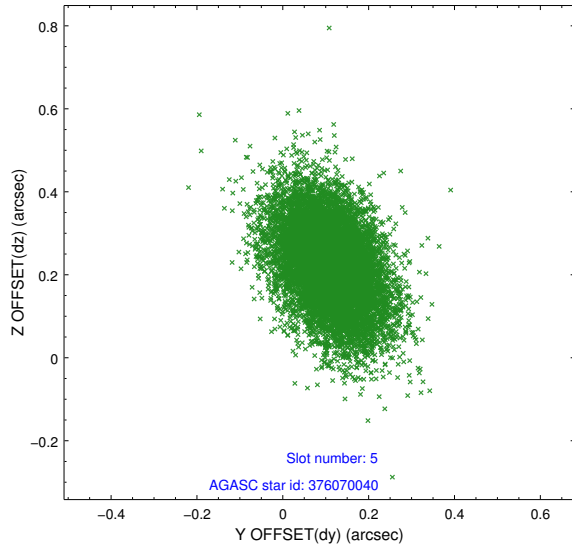
2.4.1 Slot 3



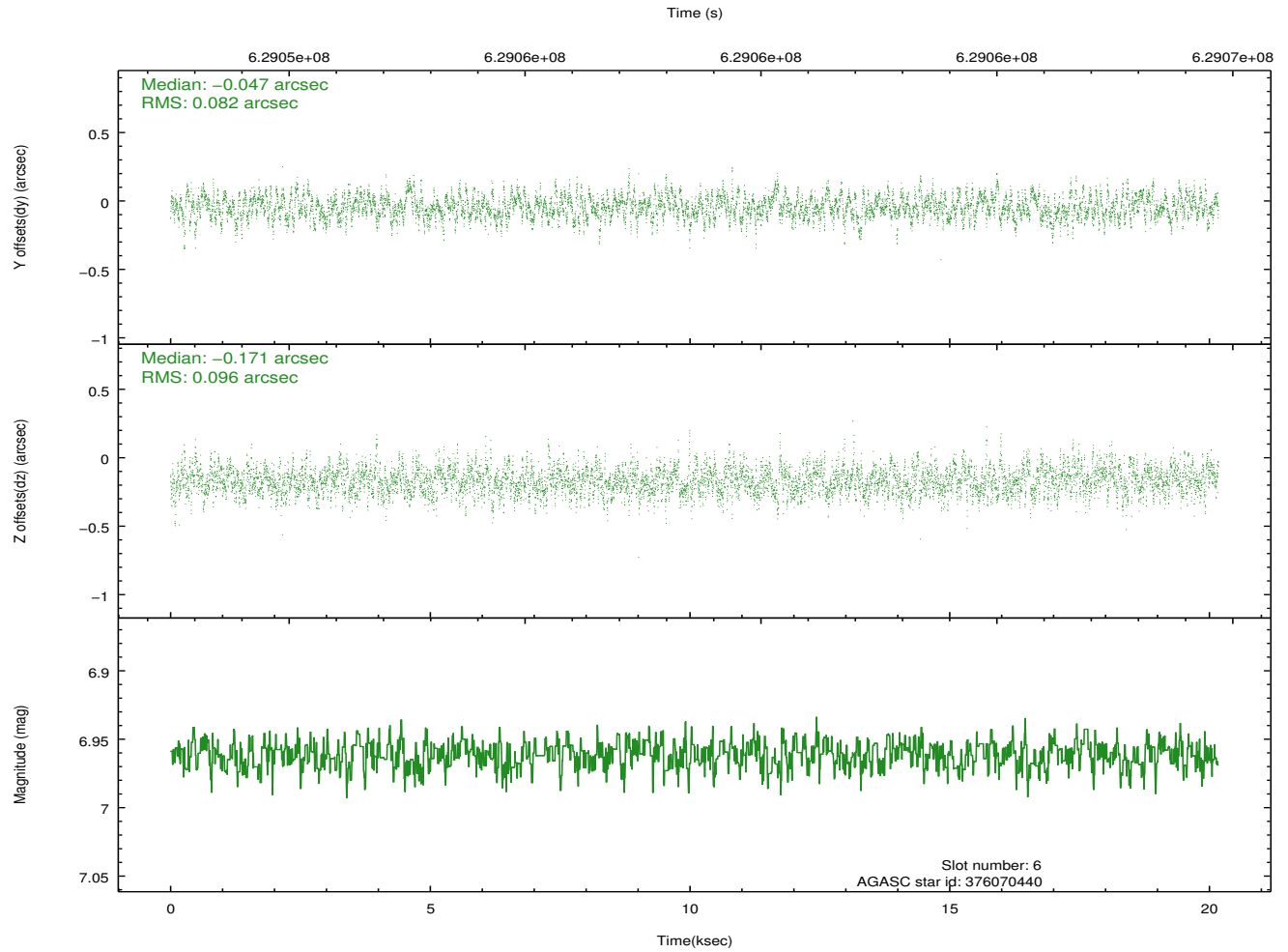
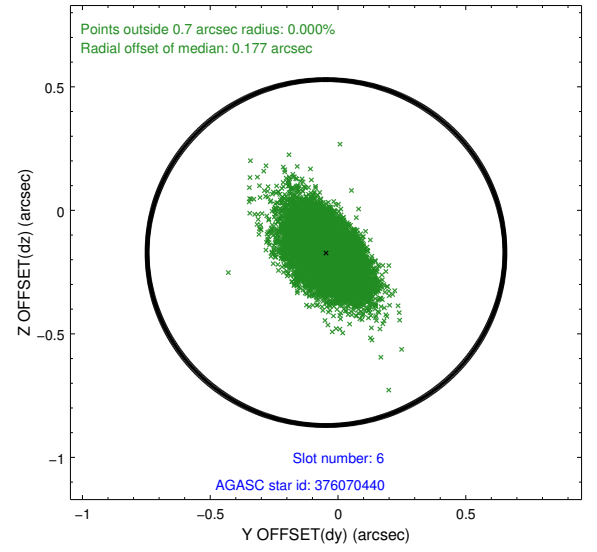
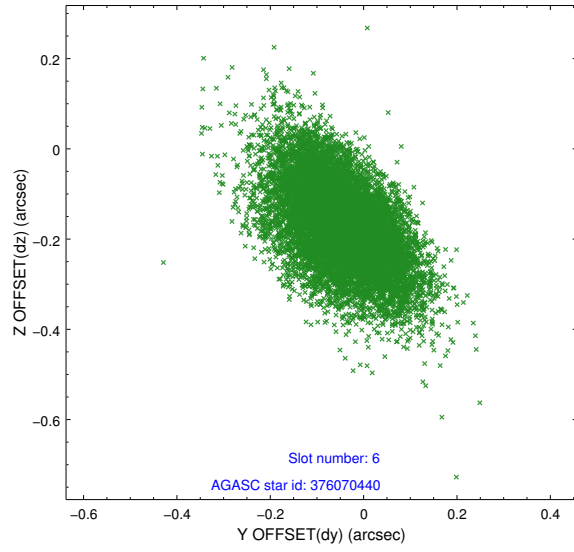
2.4.2 Slot 4



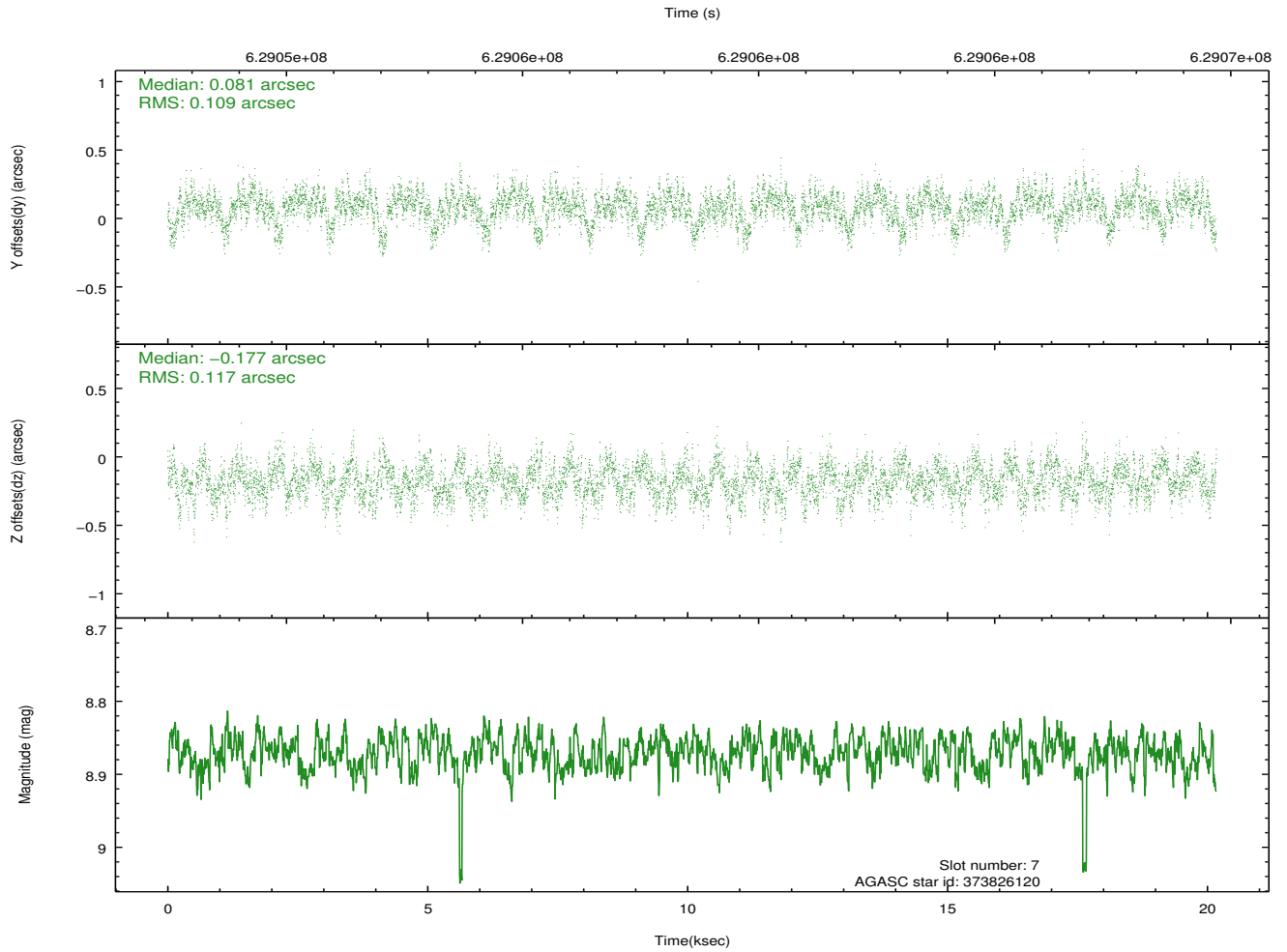
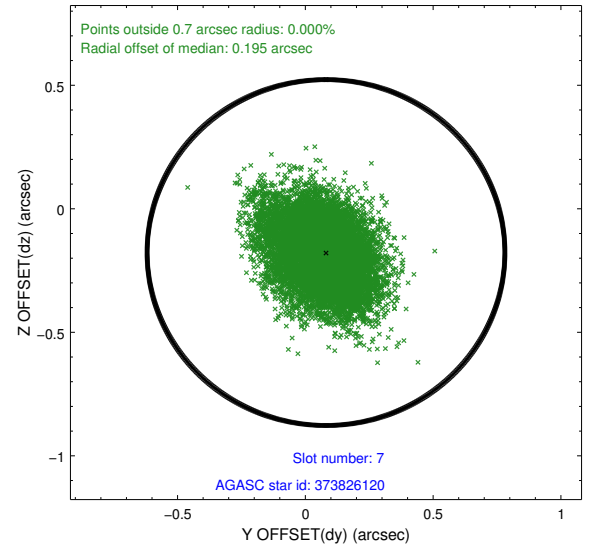
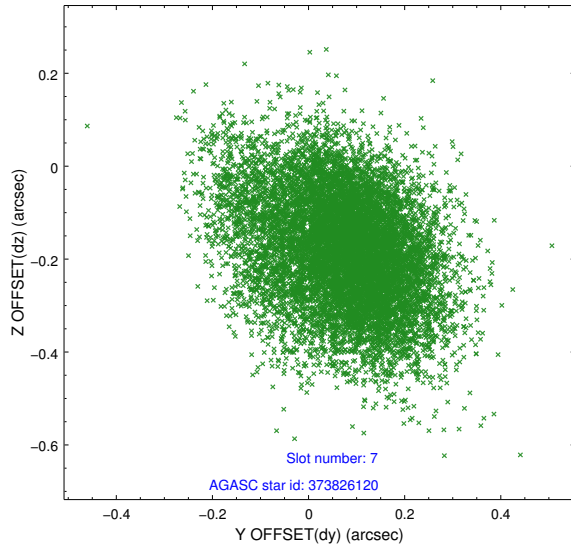
2.4.3 Slot 5



2.4.4 Slot 6

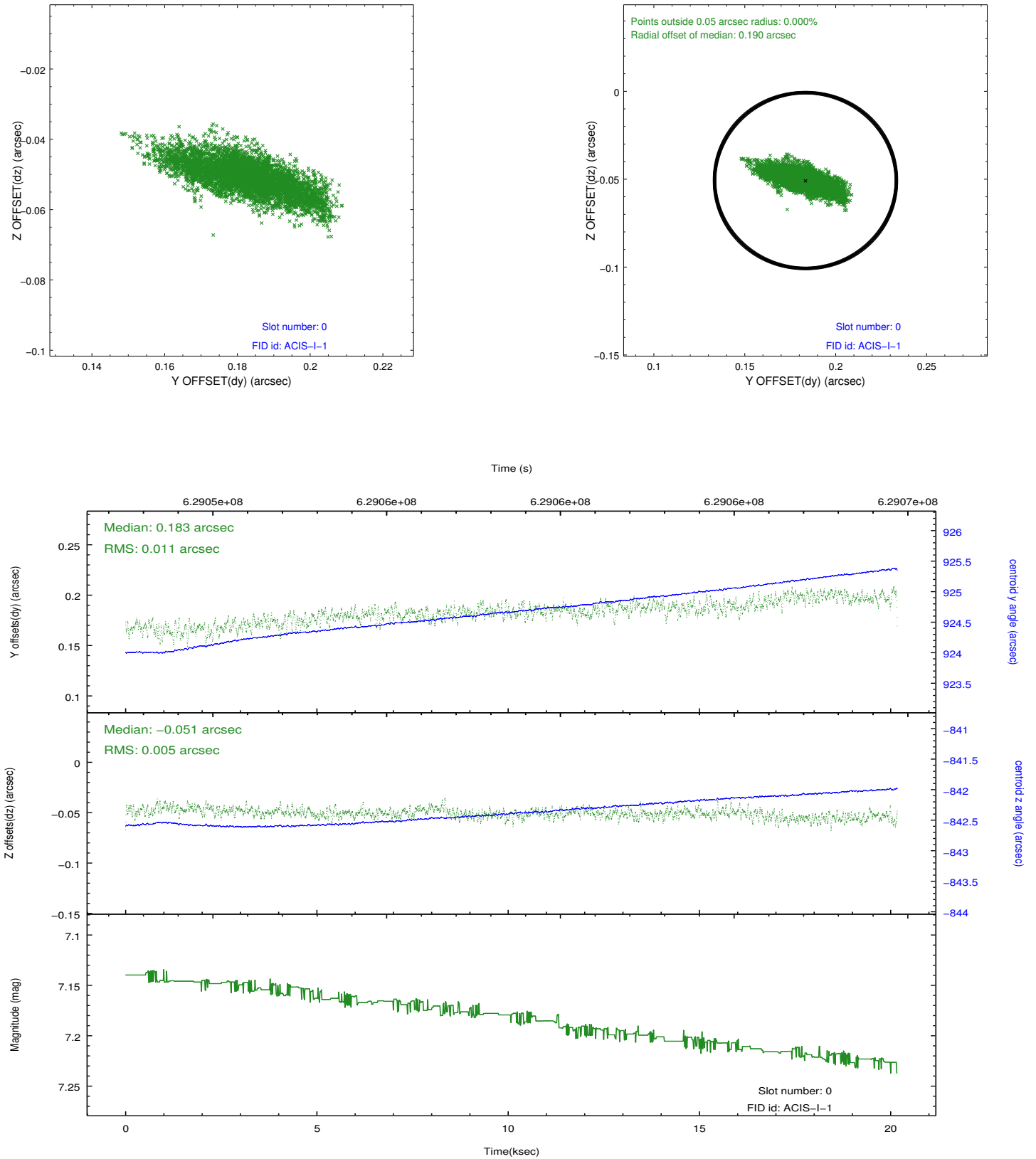


2.4.5 Slot 7

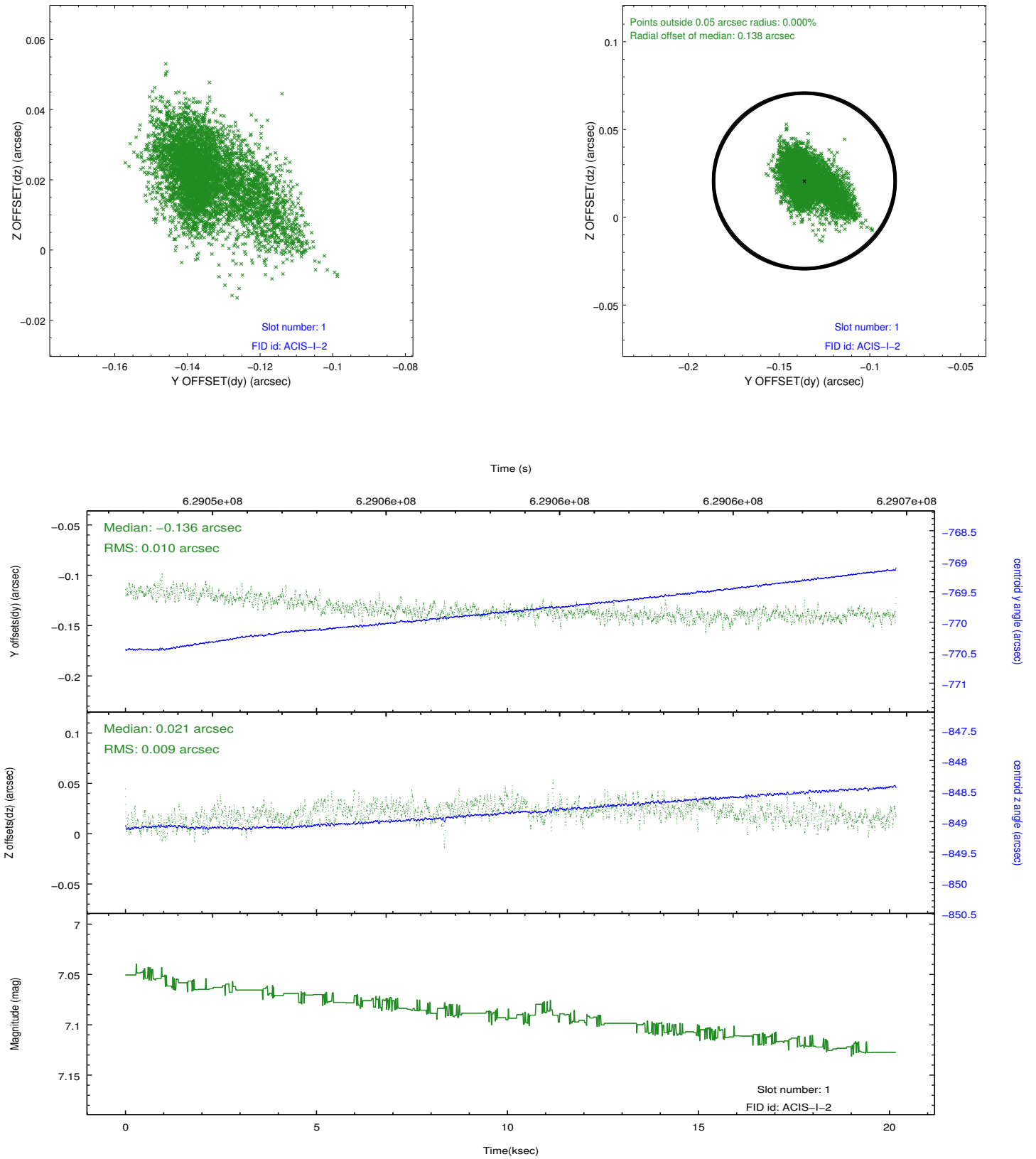


2.5 FID Slots

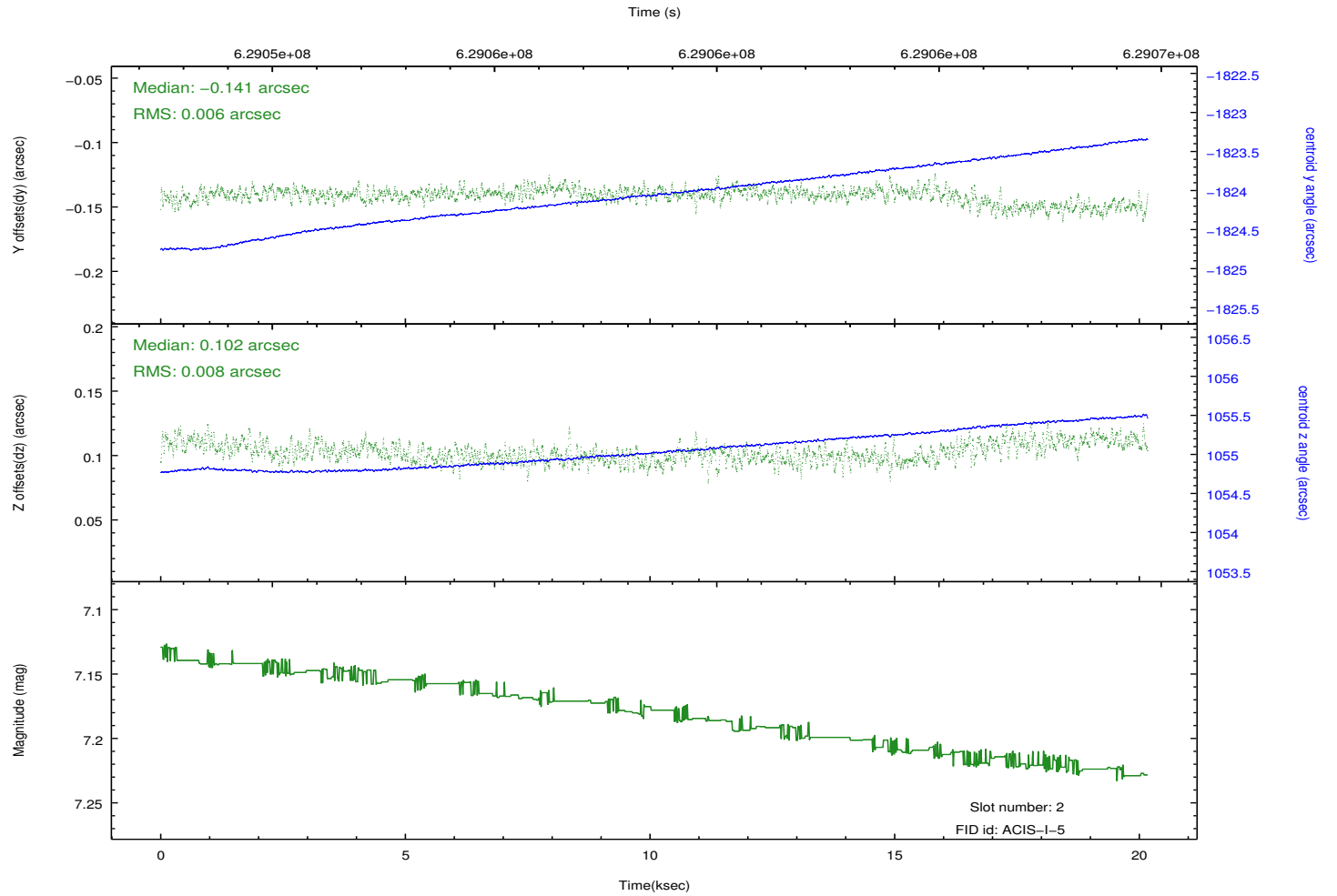
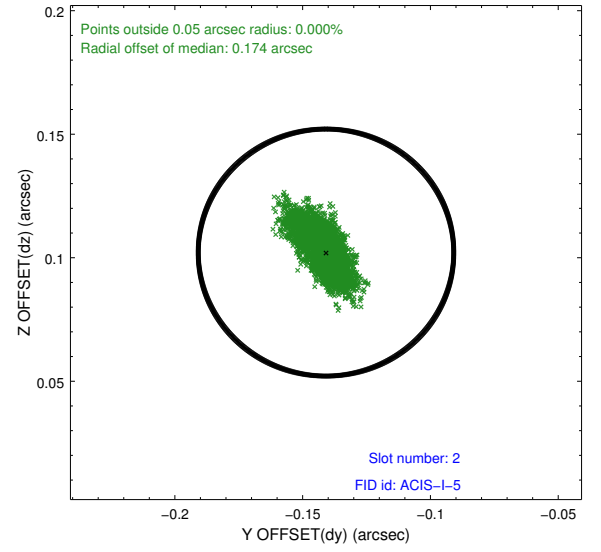
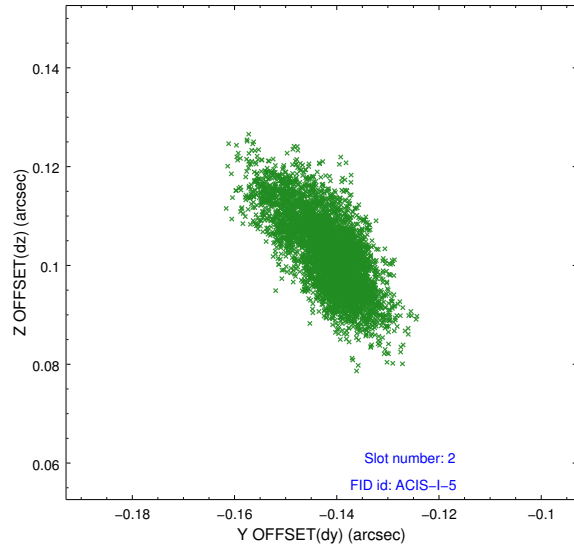
2.5.1 Slot 0



2.5.2 Slot 1



2.5.3 Slot 2



A Summary

A.1 Status

V&V Scientist	Beth Sundheim
V&V Date (YYYY-MM-DD)	2018.03.07
V&V Edition	2
V&V Disposition and Status	OK
V&V Charge Time	20.075140600562

A.2 Comments

The focal plane temperature during part 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.