

V&V Reference Report

L2 ASCDS Version : 10.7.1

Observation 20921 - L2 Version 2
Chandra X-Ray Center

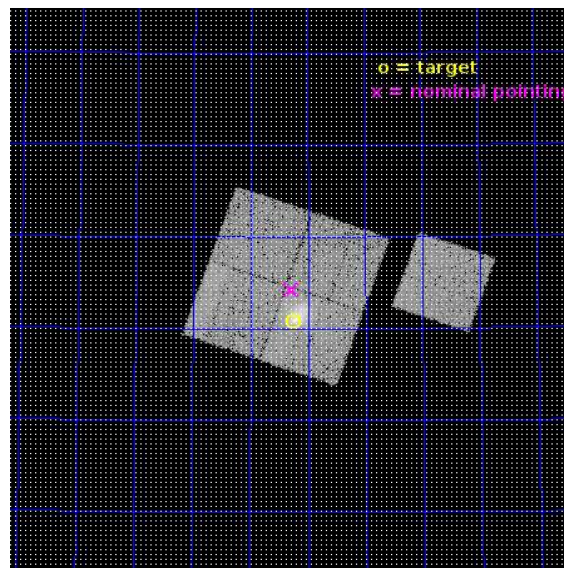
L2 Processing Date : Mar 6 2019

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1 Front

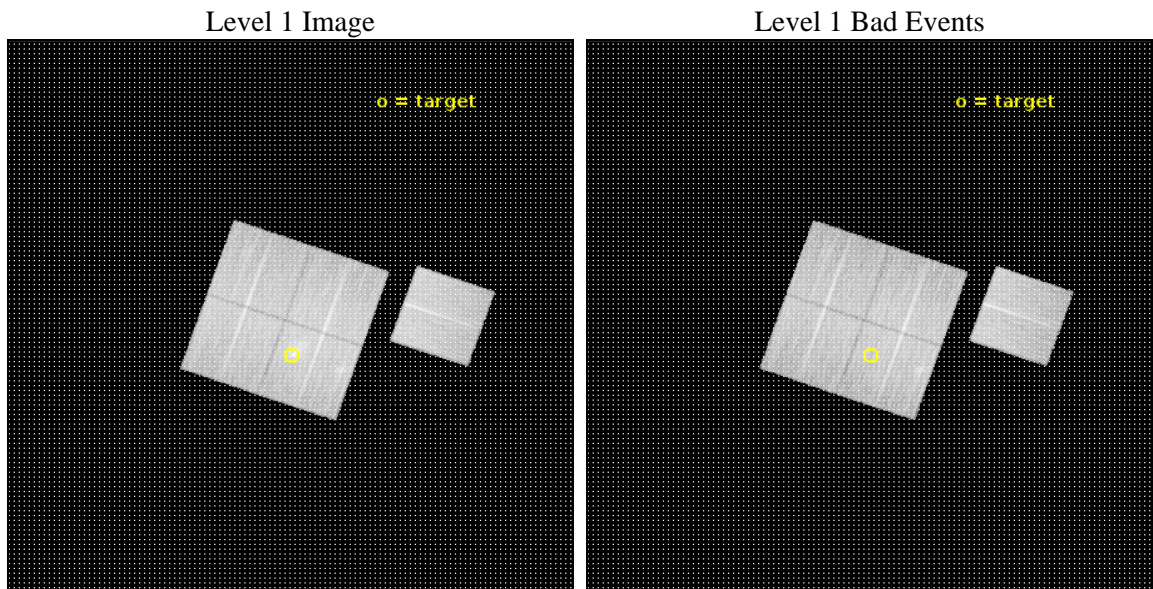
seq_num	801762	Sequence number
obs_id	20921	Observation id
title	Shock structure, the electron-ion equilibration timescale and the disintegrating cool core in A2146	Proposal title
observer	Helen Russell	Principal investigator
object	Abell 2146	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	239.06125	Observer's specified target RA [deg]
dec_targ	66.346917	Observer's specified target Dec [deg]
ra_nom	239.07161246978	Nominal RA [deg]
dec_nom	66.404036561767	Nominal Dec [deg]
roll_nom	109.19920388521	Nominal Roll [deg]
revision	2	Processing version of data
ontime	20058.866157174	Sum of GTIs [s]
livetime	19796.782303708	Livetime [s]
ontime0	20061.884116888	Sum of GTIs [s]
ontime1	20065.066157103	Sum of GTIs [s]
ontime2	20065.107197165	Sum of GTIs [s]
ontime3	20058.866157174	Sum of GTIs [s]
ontime6	20058.702056646	Sum of GTIs [s]
l2events	84494	Number of level 2 events



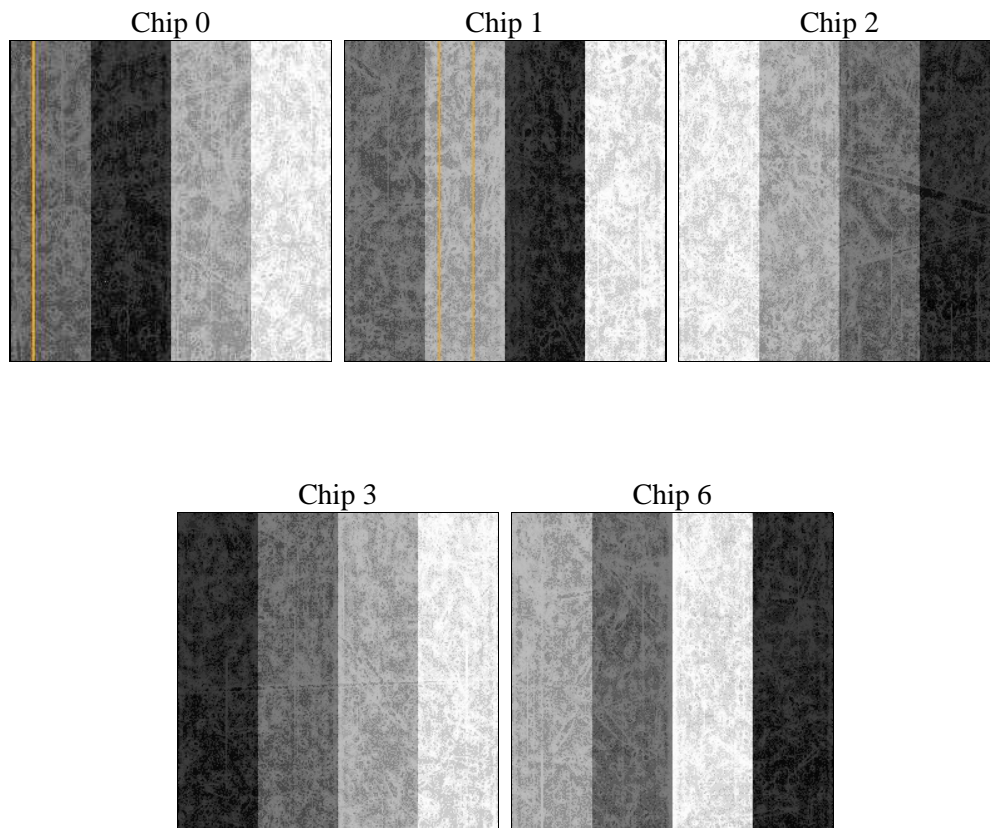
2 OBI

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	10.7.1	Processing system revision	ontime	20058.866157174	Sum of GTIs [s]
caldbver	4.8.2	 	ontime0	20061.884116888	Sum of GTIs [s]
date	2019-03-07T03:35:23	Date and time of file creation	ontime1	20065.066157103	Sum of GTIs [s]
revision	2	Processing version of data	ontime2	20065.107197165	Sum of GTIs [s]
			ontime3	20058.866157174	Sum of GTIs [s]
			ontime6	20058.702056646	Sum of GTIs [s]
			l1events	751828	Number of level 1 events

2.1.4 Events

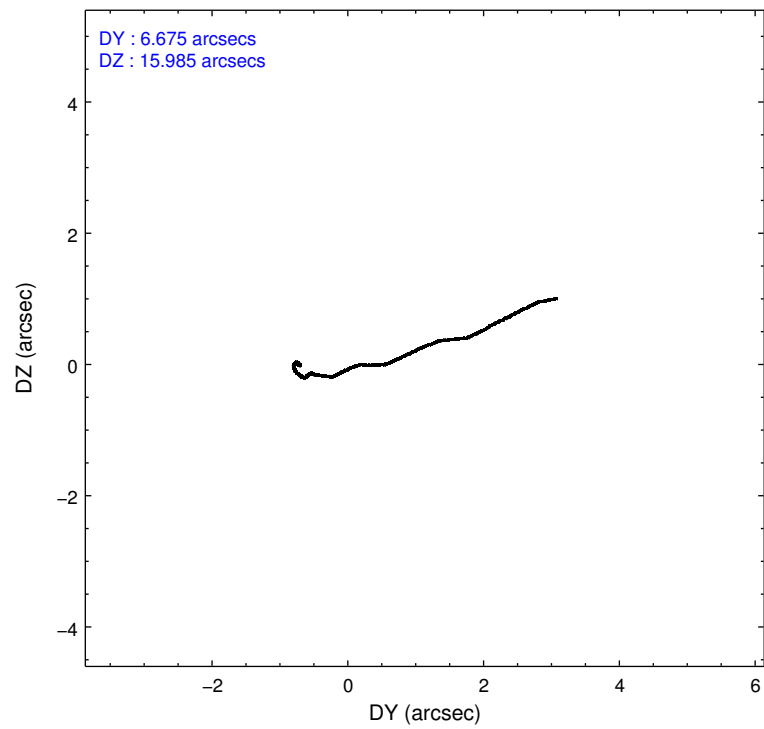
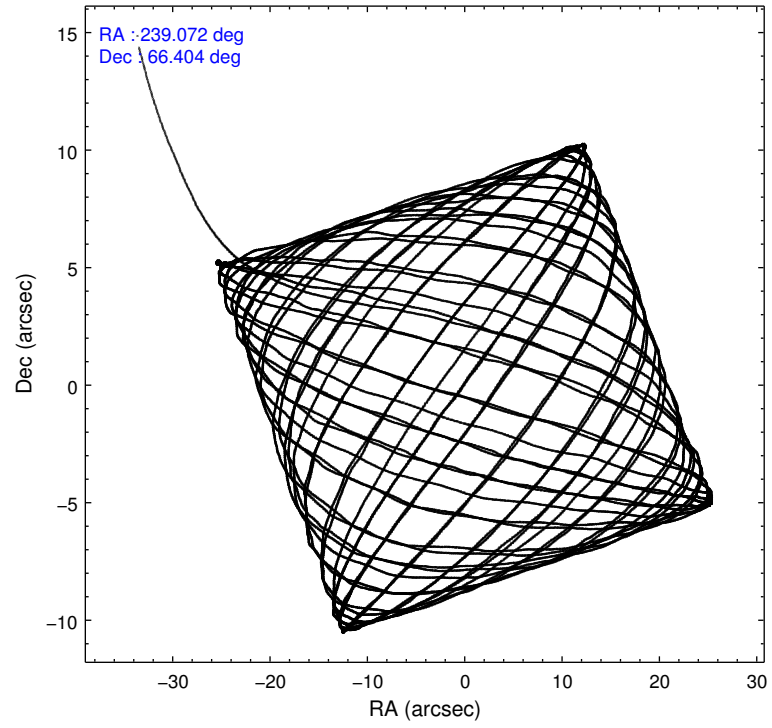
	ccd 0	ccd 1	ccd 2	ccd 3	ccd 6
level 1 events	138105	146600	151464	164041	151618
rejected events	120562	126846	134139	137421	134191
rejected %	87%	86%	88%	83%	88%

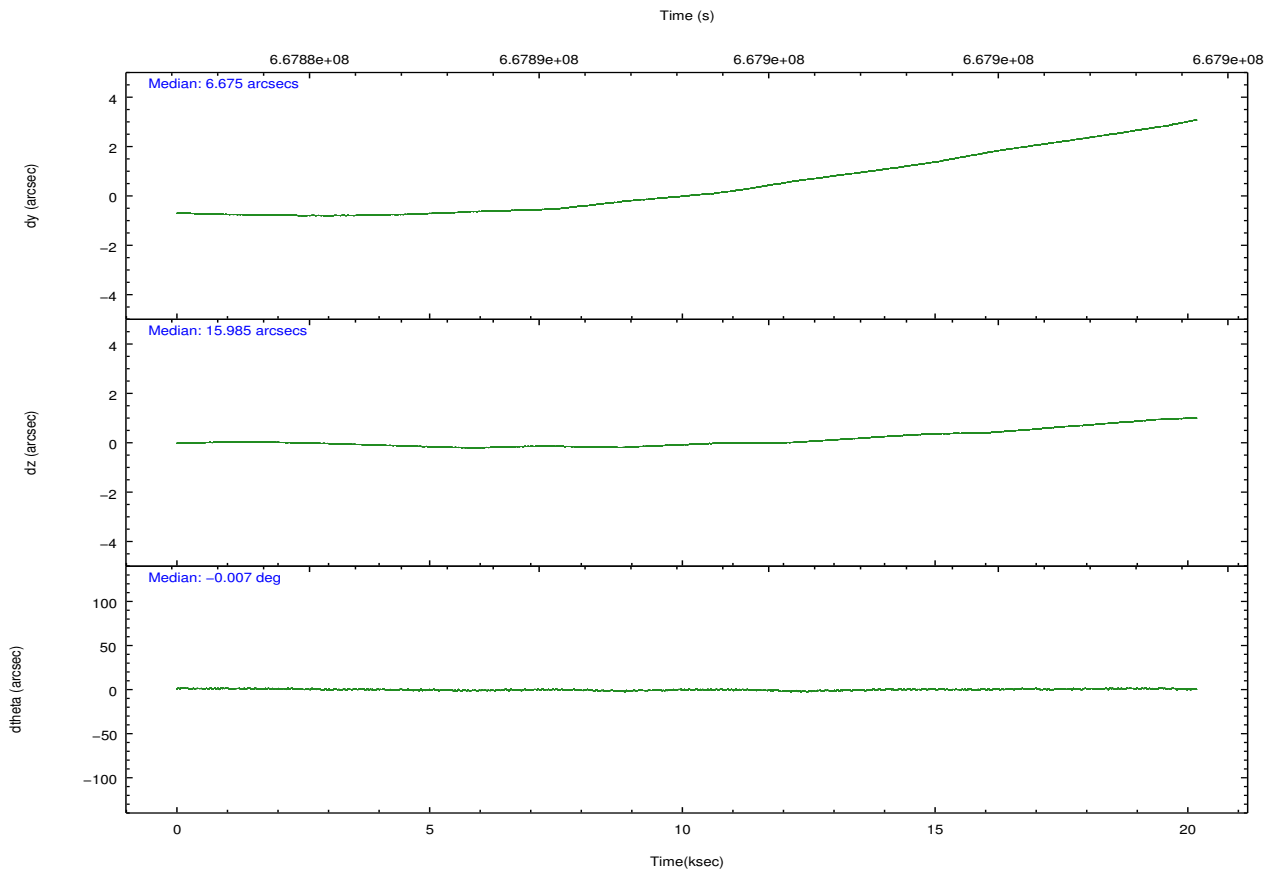
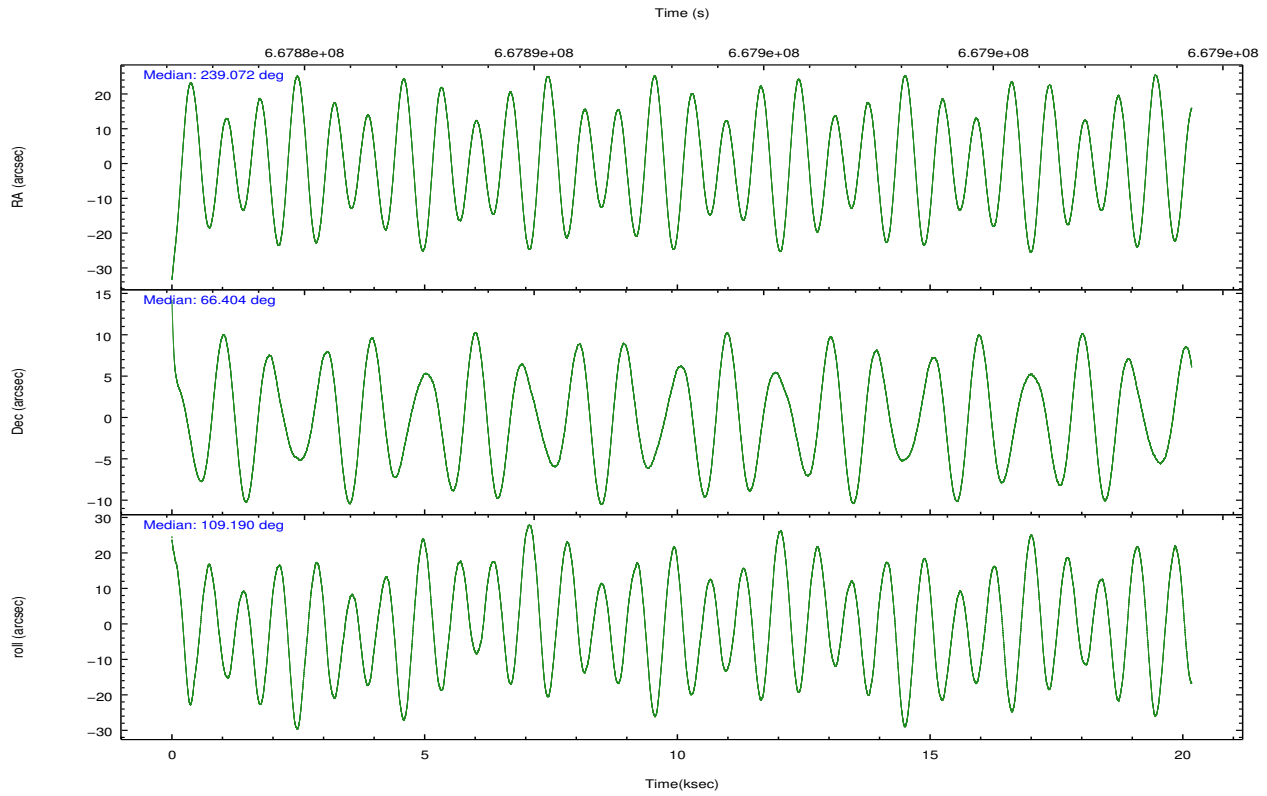
	ccd 0	ccd 1	ccd 2	ccd 3	ccd 6
grade 0 events	6003	6667	6176	14175	5690
	4%	4%	4%	8%	3%
grade 1 events	78	76	94	143	61
	0%	0%	0%	0%	0%
grade 2 events	4495	5215	4362	4649	4127
	3%	3%	2%	2%	2%
grade 3 events	1822	1825	1672	1974	1716
	1%	1%	1%	1%	1%
grade 4 events	1600	1771	1719	2051	1730
	1%	1%	1%	1%	1%
grade 5 events	6478	6947	6156	7171	7132
	4%	4%	4%	4%	4%
grade 6 events	3634	4281	3403	3773	4174
	2%	2%	2%	2%	2%
grade 7 events	113995	119818	127882	130105	126988
	82%	81%	84%	79%	83%

2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar format version number	7	7
Detector	ACIS-01236	ACIS-01236	Obspar file type	PREDICTED	ACTUAL
Grating	NONE	NONE	Obspar update status	NONE	UPDATED
Data mode	VFAINT	VFAINT	CCD I0 on	Y	Y
Observation mode	POINTING	POINTING	CCD I1 on	Y	Y
[deg] Pointing RA	239.123941	239.0716124697779	CCD I2 on	Y	Y
[deg] Pointing Dec	66.386059	66.40403656176704	CCD I3 on	Y	Y
[deg] Pointing Roll	108.942567	109.1992038852075	CCD S0 on	N	N
[mm] SIM focus pos	-0.782348	-0.7809083437167272	CCD S1 on	N	N
[mm] SIM defocus	0	0.001439871863259334	CCD S2 on	O1	Y
[mm] SIM translation stage pos	-233.592463	-233.5874344608287	CCD S3 on	N	N
[mm] SIM translation stage offset	0	-0.005018542100998502	CCD S4 on	N	N
[s] Observation start time (MET)	667883308.184000	667882355.87244	CCD S5 on	N	N
Observation start date	2019-03-02T03:07:19	2019-03-02T02:52:35	Number of optional ACIS chips dropped	0	0
[s] Observation end time (MET)	667903308.184000	667904181.7112499	On-chip summing requested	N	N
Observation end date	2019-03-02T08:40:39	2019-03-02T08:56:21	Subarray requested	NONE	NONE
Read mode	TIMED	TIMED	Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	3.1

2.3 Aspect





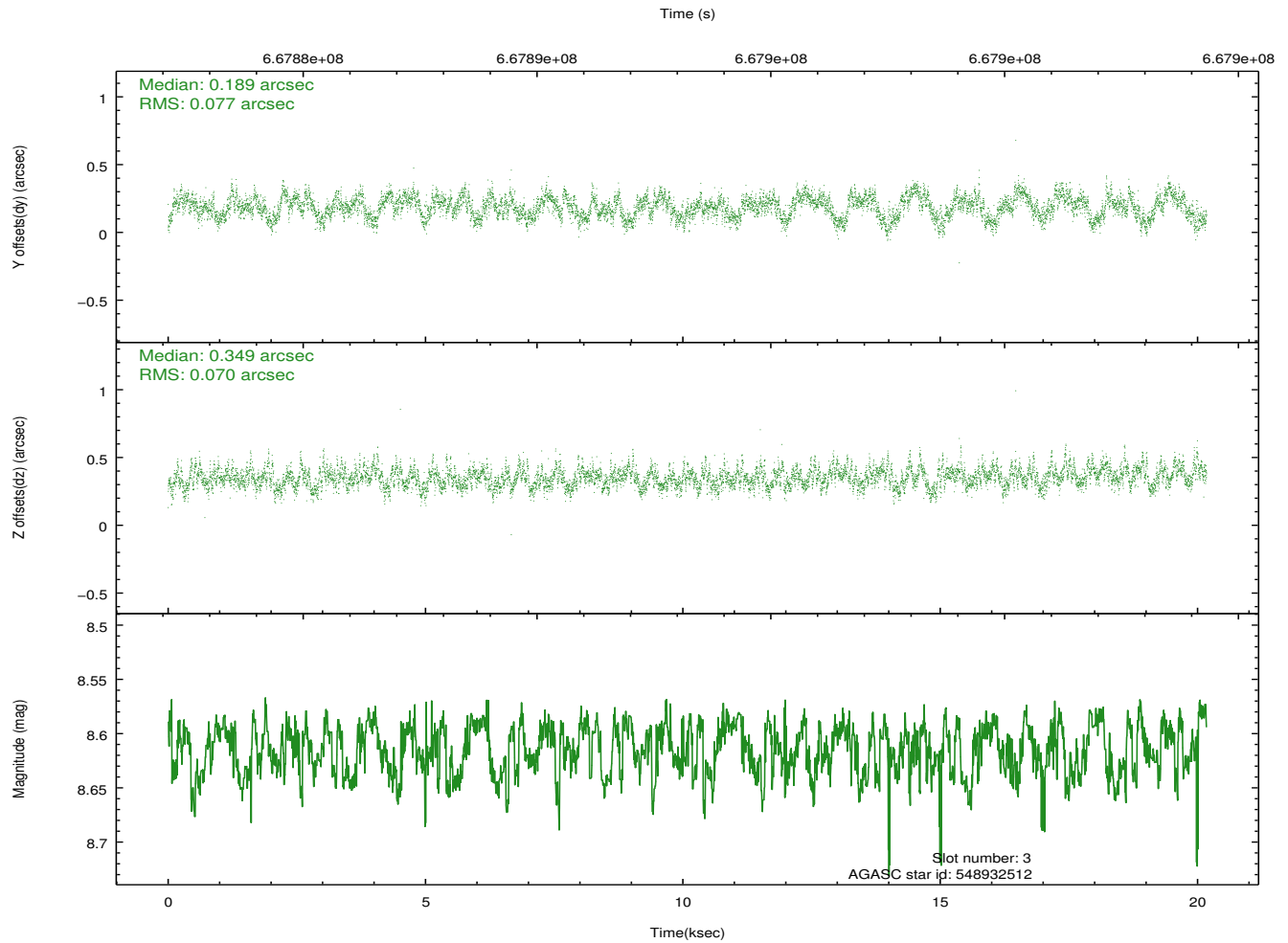
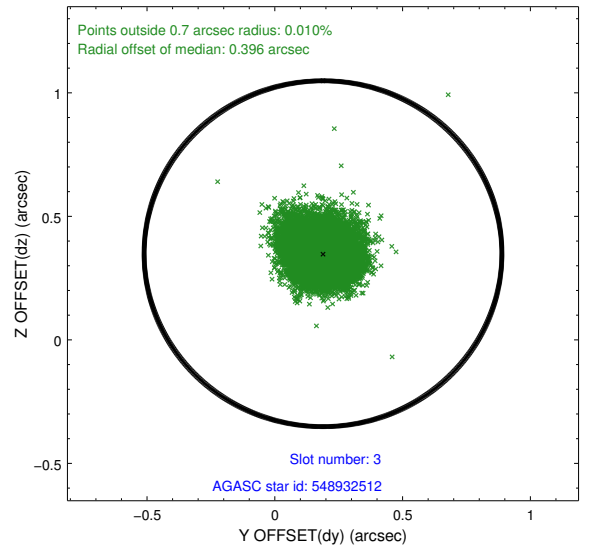
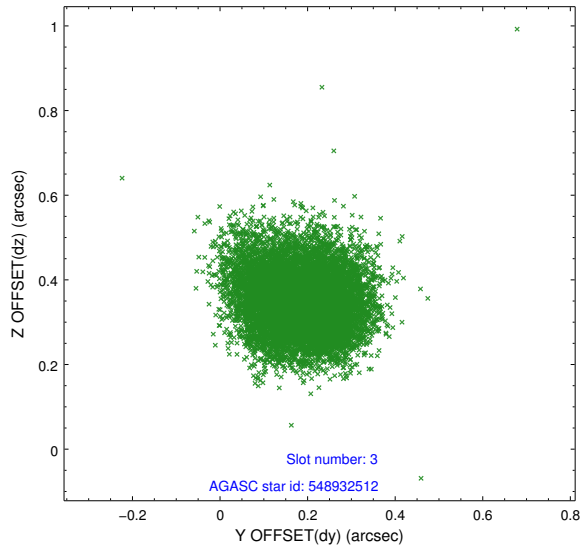
Slot Statistics

pt	status	used	id	mag	n_pts	frac_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mea
0	FID		ACIS-I-1	7.12	4921	1.000	0.118	-0.149	0.013	0.024	0.000000	0.000000	932.75	-839
1	FID		ACIS-I-5	7.07	4921	1.000	-0.436	0.036	0.013	0.019	0.000000	0.000000	-1815.96	1057
2	FID		ACIS-I-6	7.08	4921	1.000	0.223	0.182	0.016	0.028	0.000000	0.000000	398.00	1702
3	GUIDE	used	548932512	8.61	9837	1.000	0.189	0.349	0.112	0.177	239.727627	66.054972	-1408.86	-448
4	GUIDE	used	548933960	8.45	9836	1.000	-0.203	-0.344	0.118	0.188	237.671184	66.428675	845.37	1920
5	GUIDE	used	548937184	9.81	9819	1.000	-0.089	-0.254	0.252	0.416	238.771821	66.565432	775.84	266
6	OMITTED			0.00	0	0.000	0.000	0.000	0.000	0.000	0.000000	0.000000	0.00	0
7	GUIDE	used	549849072	9.16	9828	1.000	0.128	0.260	0.158	0.258	240.420863	66.802816	840.87	-2231

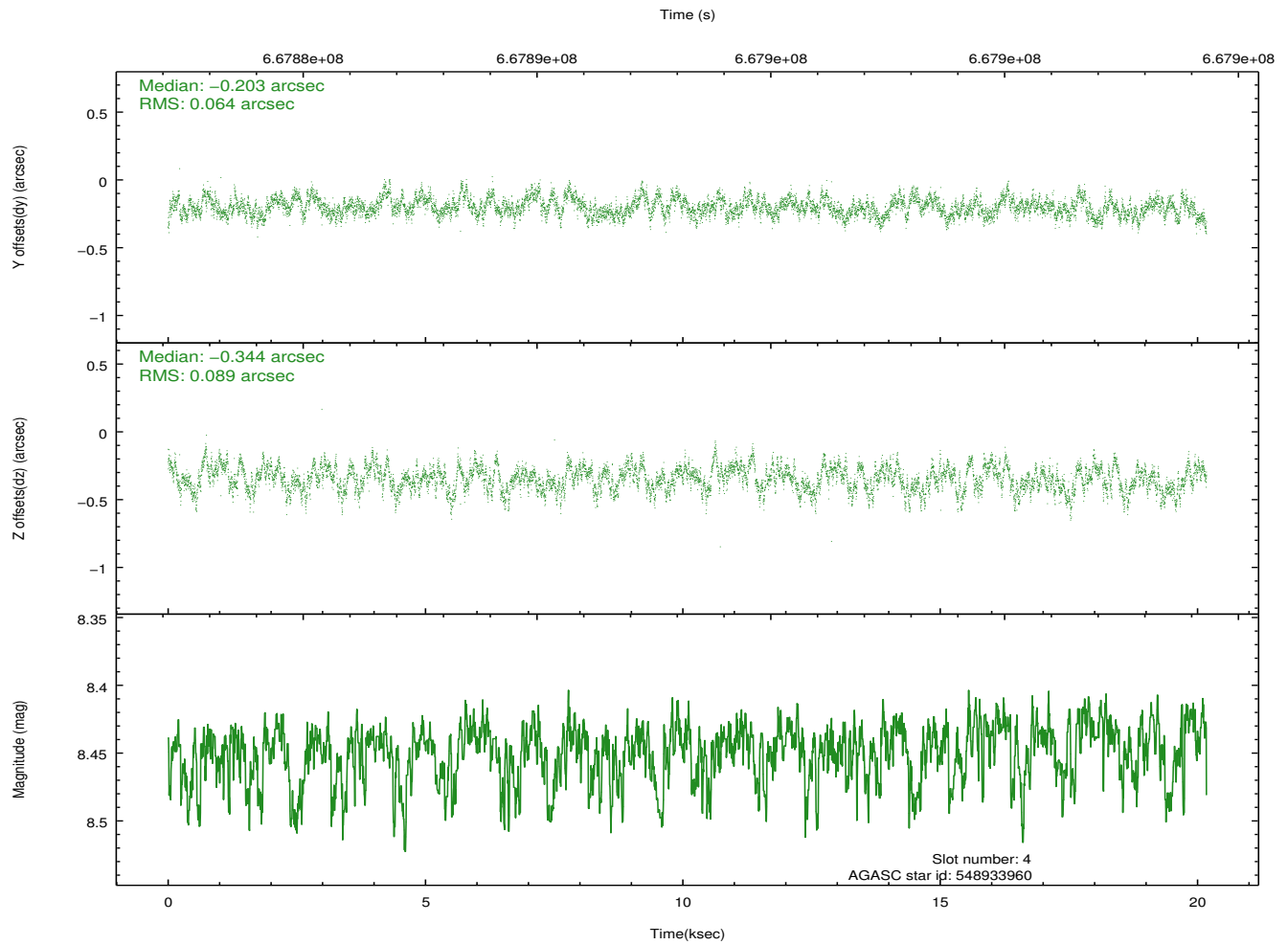
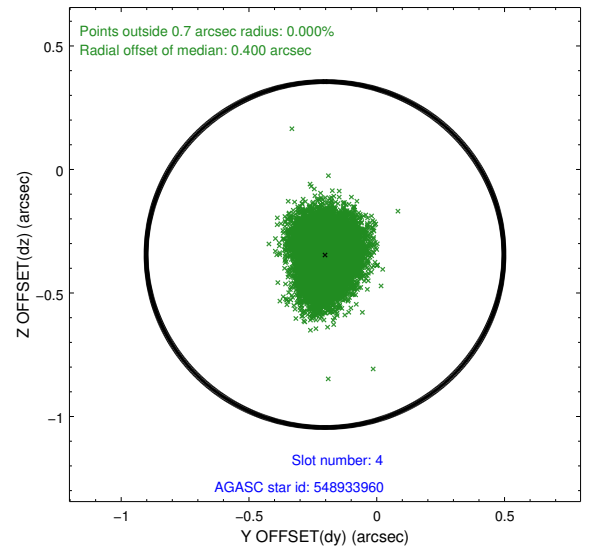
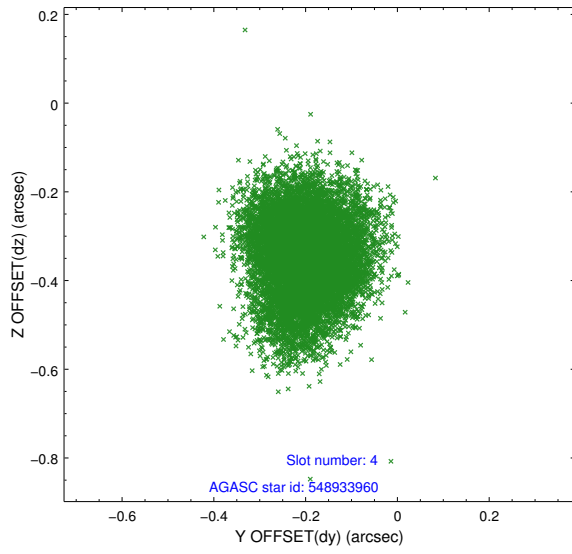
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2.4 Star Slots

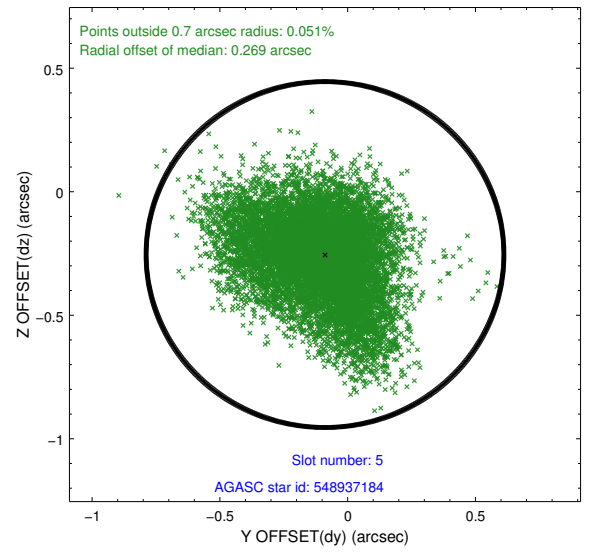
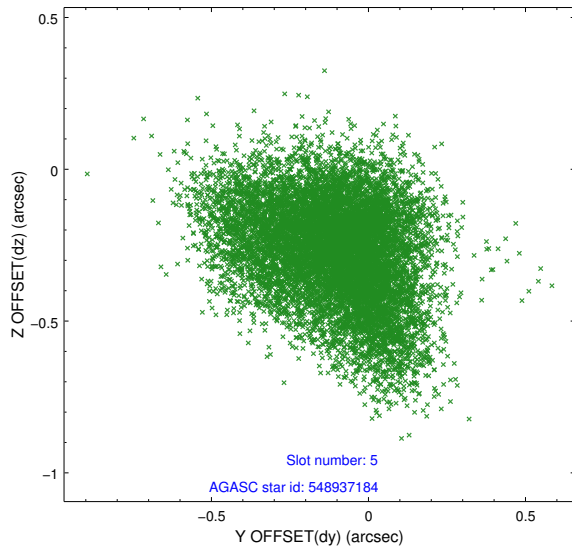
2.4.1 Slot 3



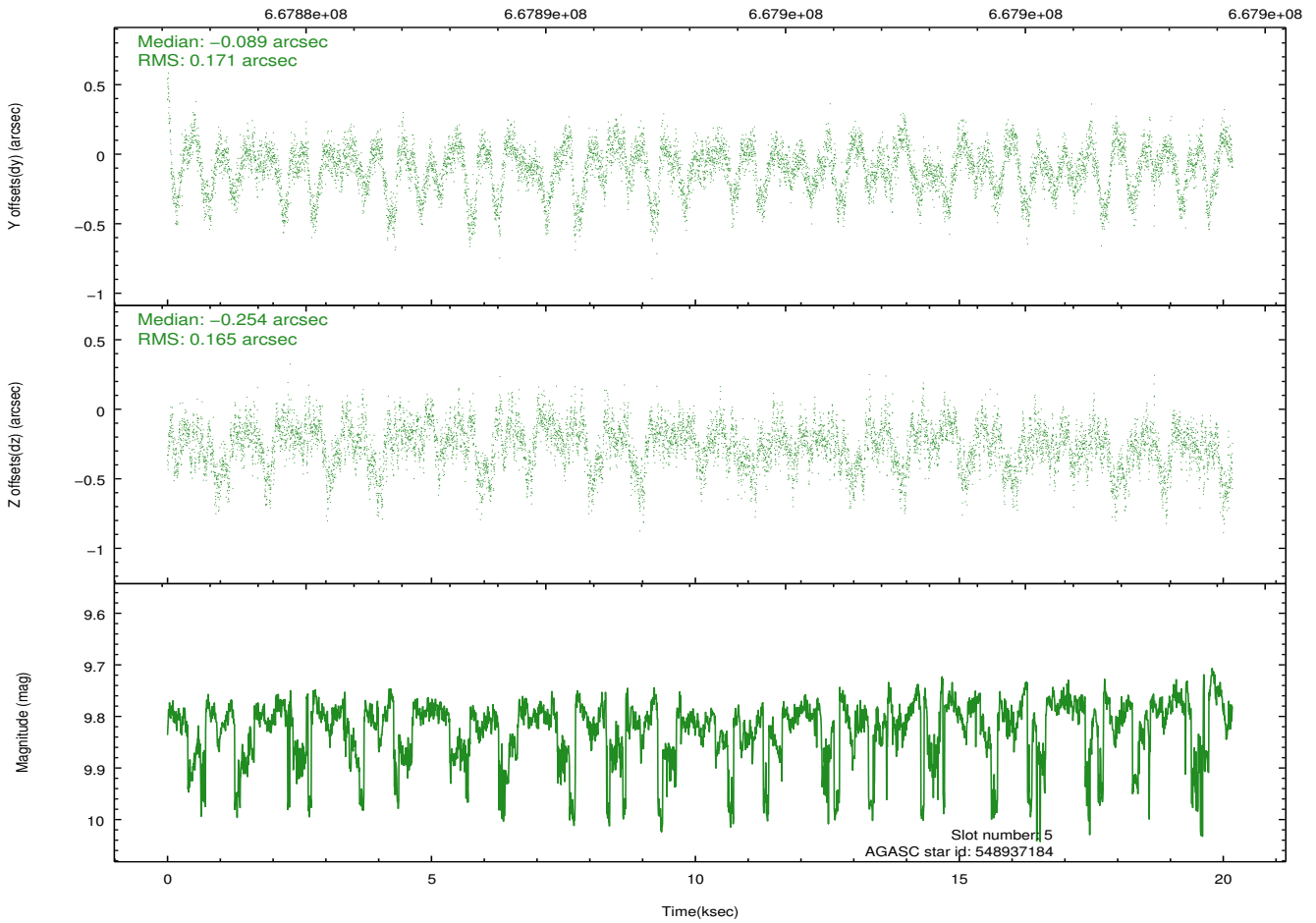
2.4.2 Slot 4



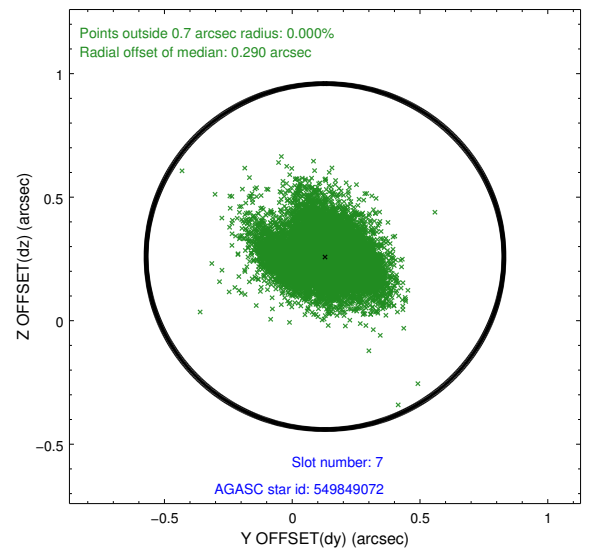
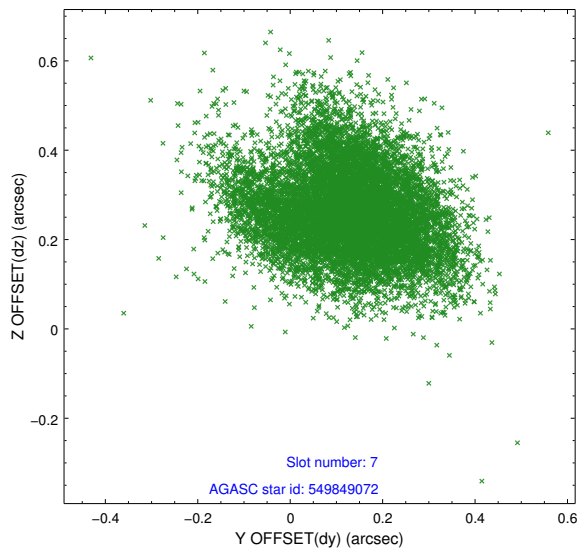
2.4.3 Slot 5



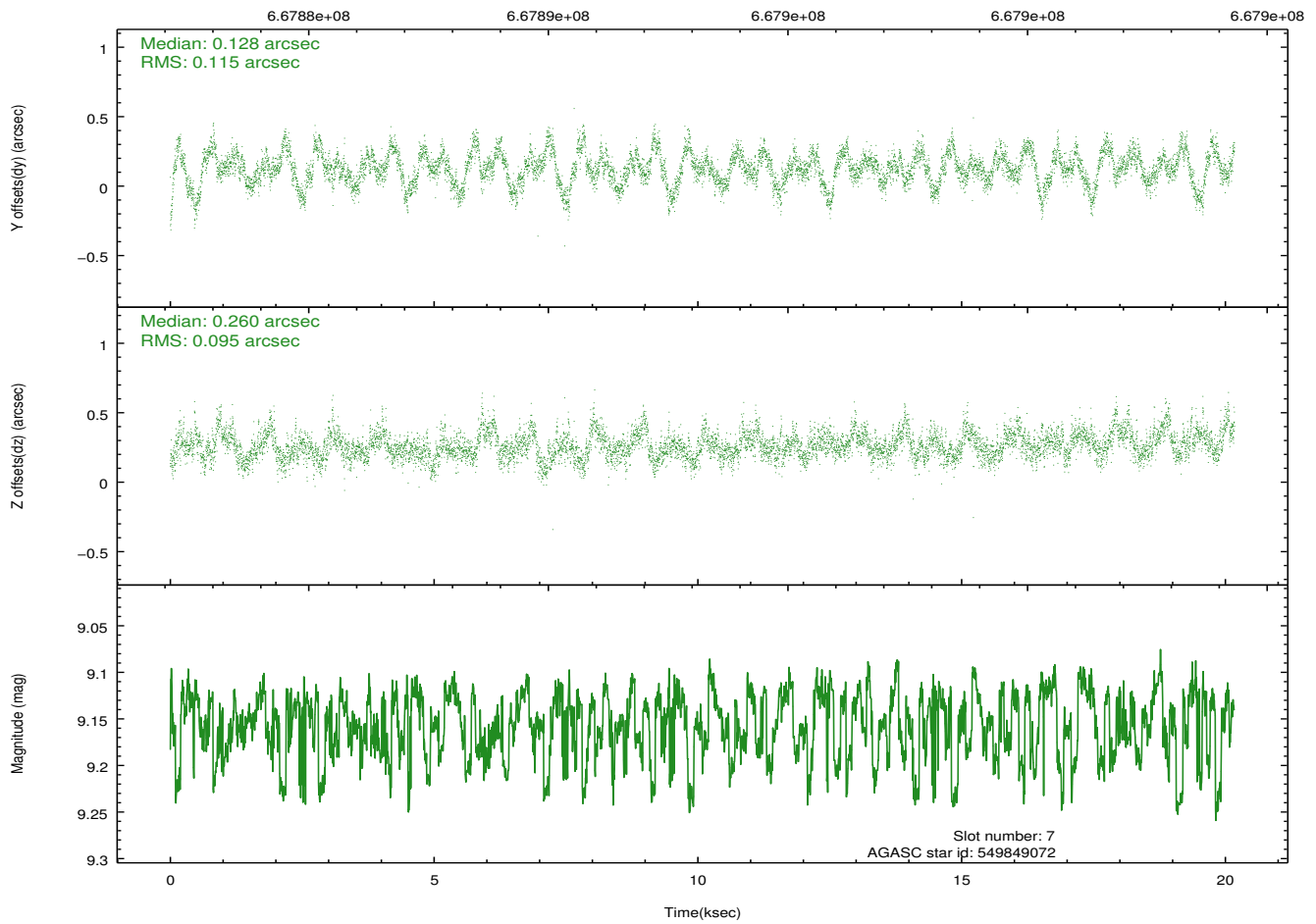
Time (s)



2.4.4 Slot 7

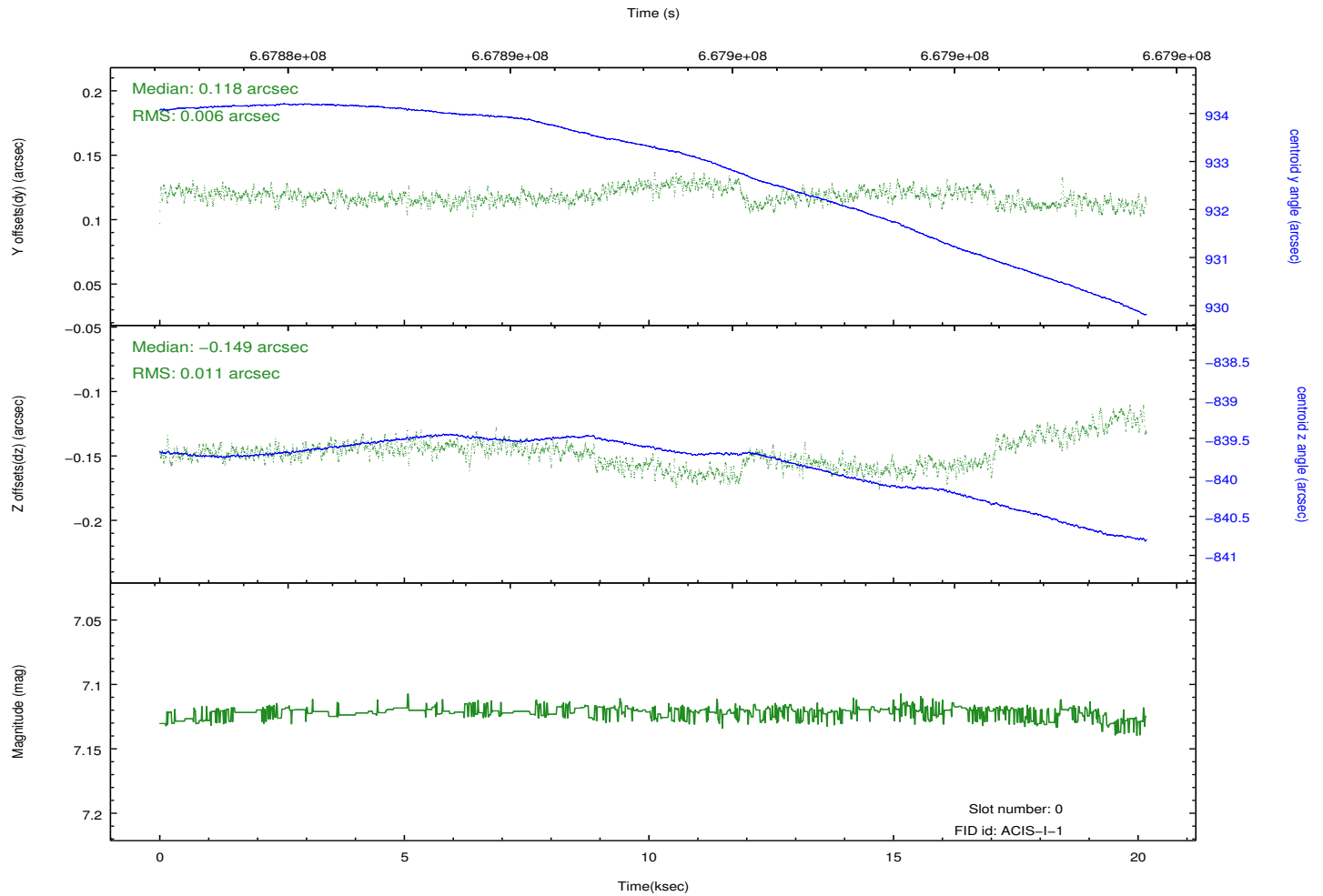
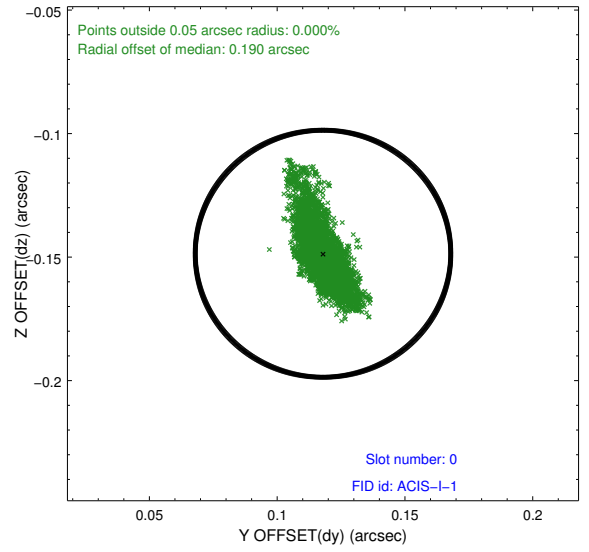
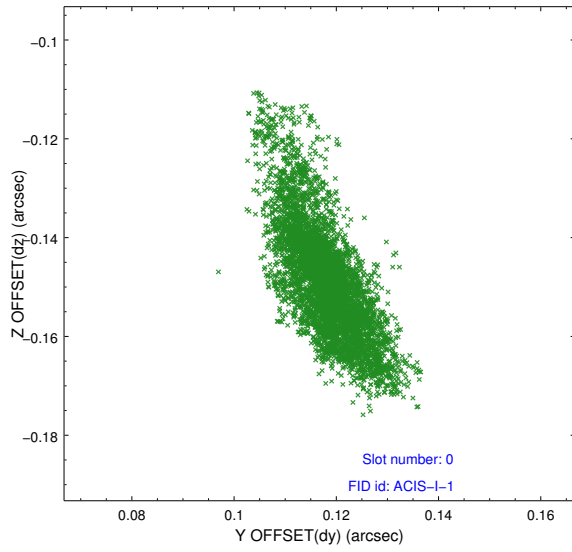


Time (s)

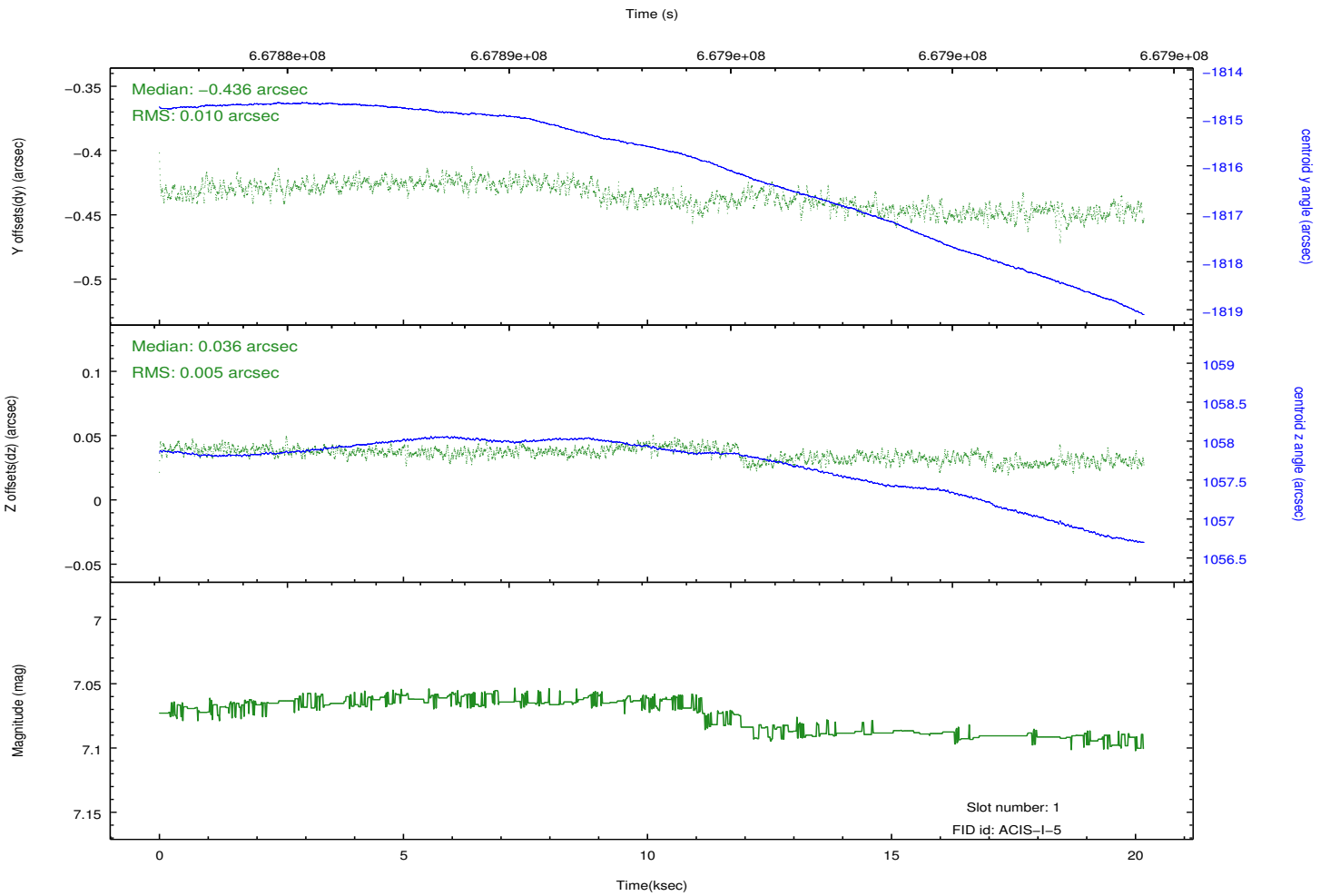
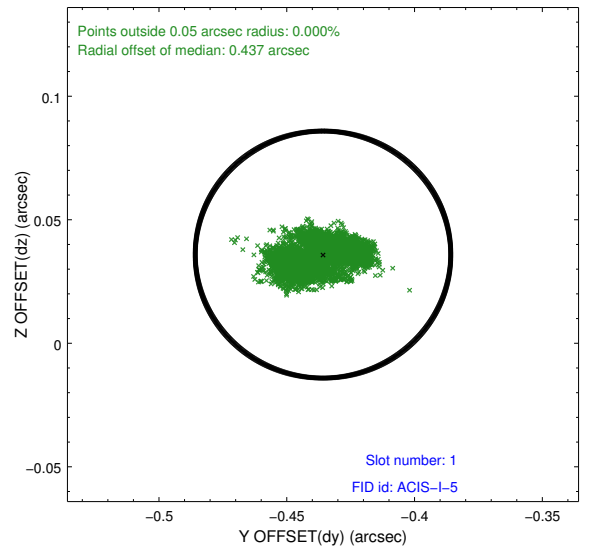
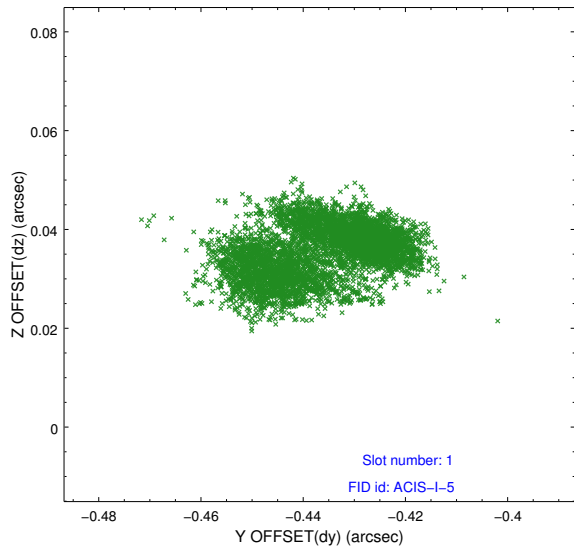


2.5 FID Slots

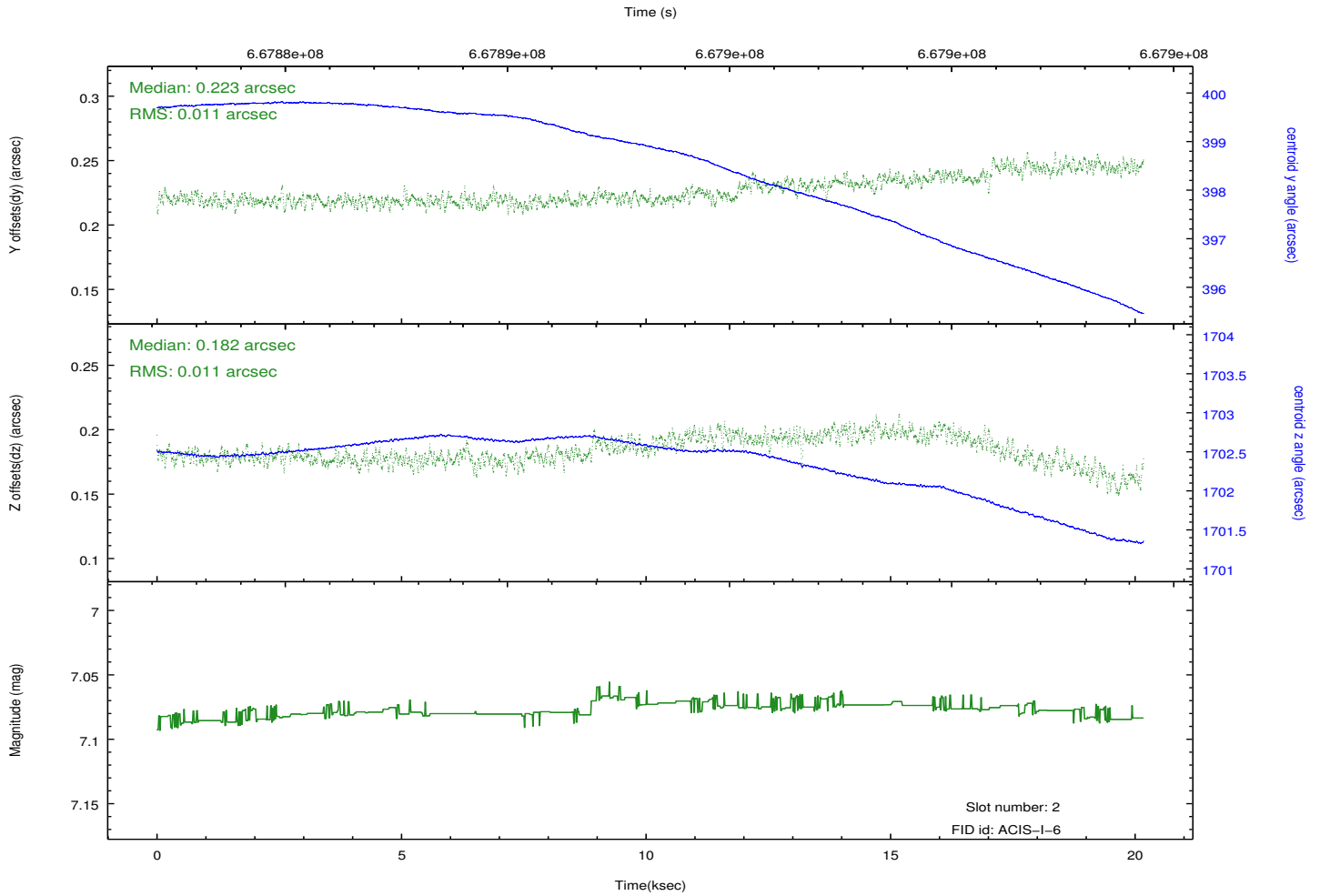
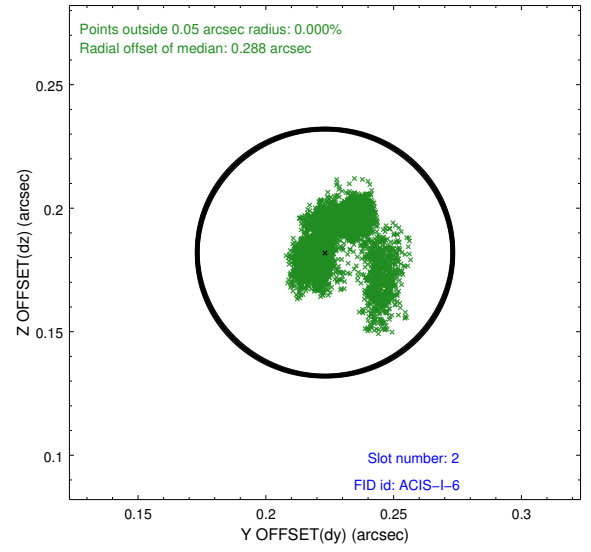
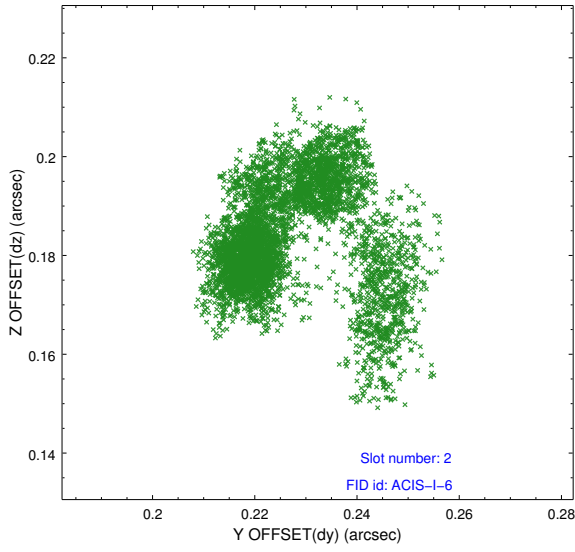
2.5.1 Slot 0



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)	2019.03.07
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	20.058866157174

A.2 Comments

The guide star in slot 6 was removed from the aspect solution due to poor data quality. The aspect solution is improved by the removal of this slot from the solution.

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A spatial region of the original bias map for CCD = 1 suffered from anomalously high data values. Pixels in the event data that were bias-corrected by one of the original affected bias pixels may have an apparent energy shift. While the change in energy is expected to be small (~20 eV), it depends on many parameters that have not yet been fully explored for this bias anomaly. The bias map for CCD = 1 has been reconstructed for this processing to remove this anomaly using scaled data from a comparable bias map from another observation. The pixels affected by the anomaly are bounded by sky coords: (239.38283,66.30183), (239.40656,66.30512), (239.35654,66.36367), (239.33276,66.36037).