



DARK ENERGY
SURVEY



Data Reduction Pipelines in a Portal Environment



Marcio Maia on behalf of
LineA Team

Science with the LSST – Campos do Jordão – April 1-4, 2012



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PreCam Survey Reduction Pipeline



Use of science portal infrastructure for:

- Reduction of PreCam data in a streamlined way.
- Storage of raw and processed data + catalogs.
- Distribution of images + catalogs to DES Collaboration.
- Host analysis and calibration tools.

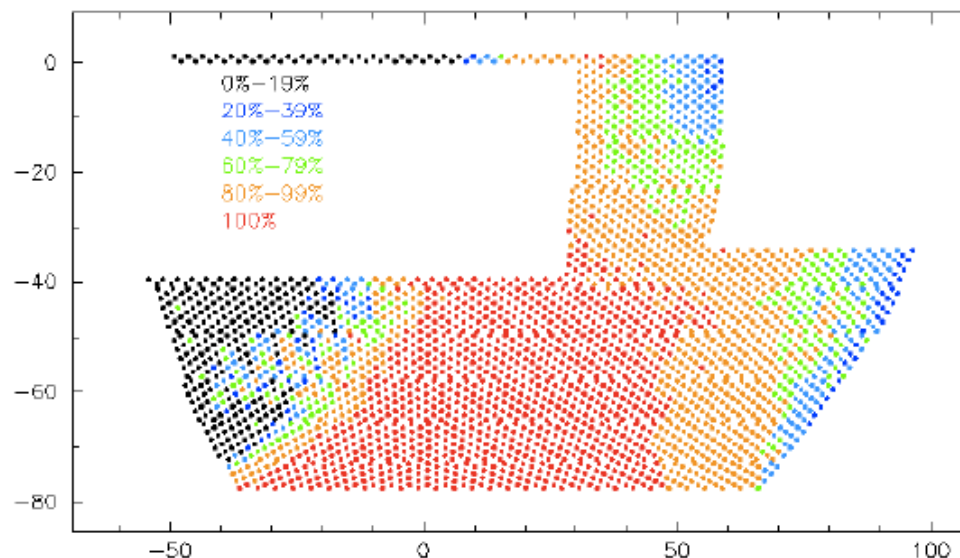


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What is PreCam Survey ?

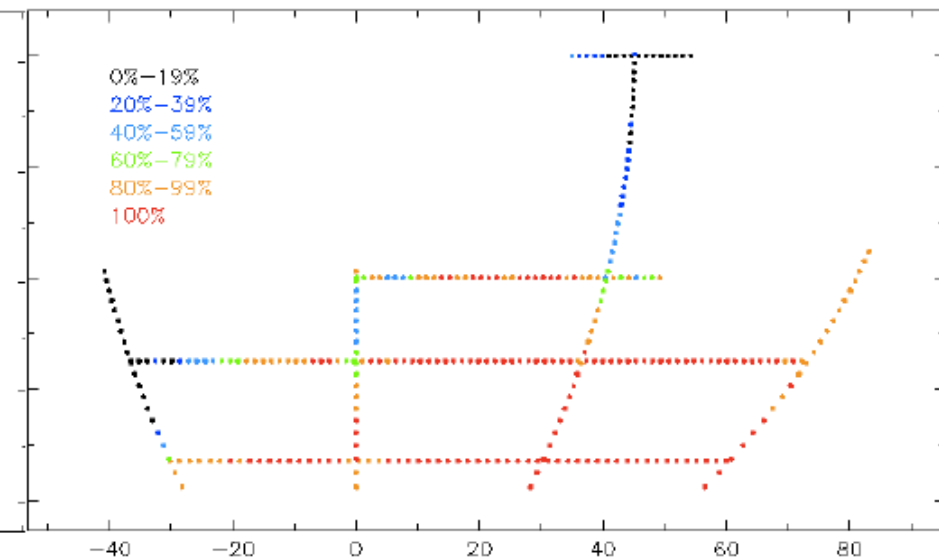


Filled Survey



Cover full DES footprint

Rib and Keel Survey



Cover 1/10th of the
DES footprint 10x



Portal



DES-Brazil Portal

testing.des-brazil.org/#

UOL - O melhor con... Webmail ON :: Bem... https://www2.banc... LineA Webmail :: Be... Gmail: Email do Goo... Outros favoritos

The Dark Energy Survey

Marcio Maia
Welcome to Testing portal.

Science Portal

Home Release Notes My Workspace **Pipelines** Tools Data Server Documentation Help Credits Other Portals Logout

- Data Reduction
 - Quick Reduce
- Advanced Products
 - Co-addition
- Science
 - PreCam
 - Science
- Quality Assessment
 - Quality Control
 - Calibration Frames

Introduction to the Science Portal

This portal is a web-based service that gives the user access to the progress of the survey, and to manage products. Links and documentation are all easily accessible in an integrated environment. The system tries to be self-evident with in-line help available in various parts of the system as well as short explanatory demonstration movies and the Help session. The portal also provides tools for power-users and system administrators to oversee the entire system.

The services currently available under the menu folder include:

- My Workspace:** provides access to the profile, processes, configurations, products from process and uploaded data. Besides that, the user can require a **developer** status, allowing the access to: 1) the portal machines through ssh; 2) the code repository in order to pull and push code;
- Pipelines:**
 - Data Reduction:** provides access to Quick Reduce, a tool to reduce DECam data in the mountain. Also an adapted version to CTIO 1m runs is currently available and will turn into the PRECam reduction pipeline.
 - Advanced Products:** here the user can produce and export catalogs, either regular or value-added, and validate them using the tools available in the portal.
 - Science:** provides access to the available scientific pipelines, grouped in sub-categories (sub-folders) representing different working and study groups. The available pipelines (processes) in each group varies in the degree of sophistication and scope but all consist of concatenated full configurable modules chosen according to the user-specified workflow and algorithms, that query for data, process one or more jobs, depending on the number of input data sets, and generate scientific products that are stored in a temporary directory,



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Data Selection



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Home PreCam Calibration Frames Data Configuration Documentation Help Logout

Provenance Search Selection

Refine by	Option	Add/Remove
Date	2011-01-20	Add Constraint
	2011-01-19	
	2011-01-17	
	2011-01-16	

Execute Query



Data Selection



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Provenance

Search

Selection

You are in page 1. Found pages between 1 and 7

Choose Page

Previous Page

Next Page

Choose lines per page: 10

	NAME	DATE	MJD	RA	DEC	FILTER	EXPTIME
<input checked="" type="checkbox"/>	PreCam_00023420	2011-01-17	55577.989156	7.888386	0.029764	out	10.0
<input checked="" type="checkbox"/>	PreCam_00023337	2011-01-17	55577.802823	3.404454	-0.040383	out	0.0
<input checked="" type="checkbox"/>	PreCam_00023417	2011-01-17	55577.98777	7.855021	0.029274	out	10.0
<input checked="" type="checkbox"/>	PreCam_00023418	2011-01-17	55577.988236	7.866223	0.029439	out	10.0
<input checked="" type="checkbox"/>	PreCam_00023341	2011-01-17	55577.804202	3.437673	-0.039951	out	0.0
<input checked="" type="checkbox"/>	PreCam_00023409	2011-01-17	55577.98116	7.695949	0.026909	out	73.0
<input checked="" type="checkbox"/>	PreCam_00023711	2011-01-17	55578.342142	13.72908	-20.570925	i	25.0
<input checked="" type="checkbox"/>	PreCam_00023389	2011-01-17	55577.955612	7.081159	0.017362	out	36.0
<input checked="" type="checkbox"/>	PreCam_00023709	2011-01-17	55578.340885	13.698833	-20.570701	i	25.0
<input checked="" type="checkbox"/>	PreCam_00023404	2011-01-17	55577.971076	7.453249	0.023211	out	162.0
<input checked="" type="checkbox"/>	PreCam_00023351	2011-01-17	55577.807647	3.520579	-0.038861	out	0.0
<input checked="" type="checkbox"/>	PreCam_00023385	2011-01-17	55577.873549	5.106427	-0.015143	out	0.0
<input checked="" type="checkbox"/>	PreCam_00023347	2011-01-17	55577.80627	3.487408	-0.039299	out	0.0
<input checked="" type="checkbox"/>	PreCam_00023416	2011-01-17	55577.987316	7.844108	0.029113	out	10.0
<input checked="" type="checkbox"/>	PreCam_00023428	2011-01-17	55578.010082	5.737965	-20.304327	i	5.0
<input checked="" type="checkbox"/>	PreCam_00023340	2011-01-17	55577.8	3.429536	-0.040057	out	0.0
<input checked="" type="checkbox"/>	PreCam_00023378	2011-01-17	55577.8	5.04822	-0.016083	out	0.0
<input checked="" type="checkbox"/>	PreCam_00023391	2011-01-17	55577.9	7.118353	0.017955	out	36.0
<input checked="" type="checkbox"/>	PreCam_00023441	2011-01-17	55578.0	5.86209	-20.302305	i	5.0
<input checked="" type="checkbox"/>	PreCam_00023369	2011-01-17	55577.8	4.973786	-0.017281	out	0.0



Select All

Unselect All

Select All Pages

Unselect All Pages

There are 20 items returned.

Confirm



Data Selection



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The Dark Energy Survey

Marcio Maia

Welcome to Testing portal

Science Portal

Home PreCam Calibration Frames Data Configuration Job Submit Documentation Help

Logout

Selection Summary

INPUT DATA	TYPE	FILTER	DATE	CALIBTYPE	SELECTED	STATUS
Astrosoft	Image	--	2011-01-17	--	121	✓

Change Selection Submit Job





Reduction Calib Frames



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Science Portal

Home **PreCam Calibration Frames** Data Configuration Job Submit Monitor Documentation Help Logout

Monitor Process

Pipeline : PreCam Calibration Frames

User	Marcio Maia
Process	10004485
Start	Fri Jun 24 12:44:39 2011
Workflow	View
Monitor	Refresh Update in 23 seconds

Input Data

Input data	Astrosoft
Type	Image
Filter	Any
Date	2011-01-17
Calibtype	Any
Selected	121

[\[+ details\]](#)

Process dispatched to cluster via Condor

Block 1	Module	Time (mm:ss)	Success	Error	Queue : 0
	Data Organizer	00:00	1	0	

Block 2	Module	Time (mm:ss)	Success	Error	Queue : 0
	Data Retriever	00:54	31	0	
	Split	00:47	31	0	



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Process ready



DES-BRAZIL

Assunto	Science Portal Process Result
Remetente	Science Portal <noreply@portal.linea.gov.br>
Data	24.06.2011 13:05

Dear Marcio Maia,

Your PreCam Calibration Frames job has finished !

Process: PreCam Calibration Frames

User: Marcio Maia
Process Id: 10004485
Start: 06-24-2011 12:44:39
End: 06-24-2011 13:05:16
Process Time: 00:20:37
Ingest Time: 00:00:03
Expiration: 06-28-2011 13:05:16
Jobs: 330

Input data: Astrosoft
Type: Image
Filter: Any
Date: 2011-01-17
Calibtype: Any
Selected: 121
Process size: 11G

You receive an e-mail from
the Portal announcing your
process is ready.

Please use the following link to check your results.
<http://testing.des-brazil.org/VP/getViewProcessCon?pro=10004485>



The data will be available in the system until 06-28-2011 13:05:16



Process ready !



PreCam Calibration Frames

View Processes

Results

Comments





Process : PreCam Calibration Frames

User	Marcio Maia
Process	10004485
Start	06-24-2011 12:44:39
End	06-24-2011 13:05:16
Process Time	0:20:37
Ingest Time	00:00:03
Expiration	06-28-2011 13:05:16
Jobs	330
Workflow	View
Code Version	View

Input Data

Input data	Astrossoft
Type	Image
Filter	Any
Date	2011-01-17
Calibtype	Any
Selected	121

+ details

Module	Time	Products	Config	Error Log	Pipeline Out	Status
Data Organizer	00:00:01	---	---			✓
Data Retriever	00:00:09	---	---	---	---	+
Split	00:00:06	---	---	---	---	+
Organize CCDs	00:00:04	---	---	---	---	+
Calibration	00:13:46	---	---			✓



Results



DA
SU

PreCam Calibration Frames

View Processes Results Comments

Summary Bias Flats Combined Frames Night Statistics

[PreCam_00023332_02](#) [PreCam_00023332_01](#) [PreCam_00023365_02](#) [PreCam_0002](#)

You can download the fits file

testing.des-brazil.org/VP/getViewProcessCon?pro=10004485#div_dis...



Individual Flats



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PreCam Calibration Frames

View Processes

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Summary

Bias

Flats

Combined Frames

Night Statistics

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r

i

Only flats in I-band
for this night

[PreCam 00023438 02](#)

[PreCam 00023438 01](#)

[PreCam 00023427 02](#)





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Combined Frames - Bias



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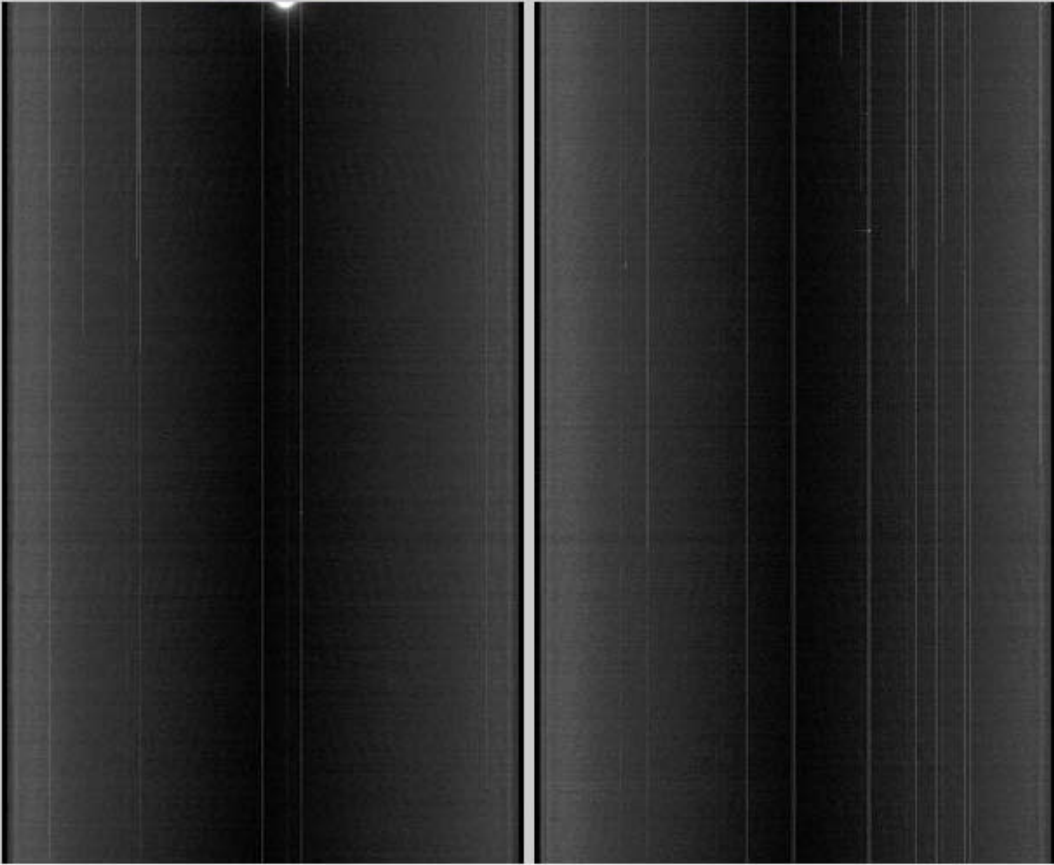
PreCam Calibration Frames

View Processes Results Comments

Summary Bias Flats **Combined Frames** Night Statistics

Bias

[biascor_01](#) [biascor_02](#)





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Combined Frames - Flats



BRASIL

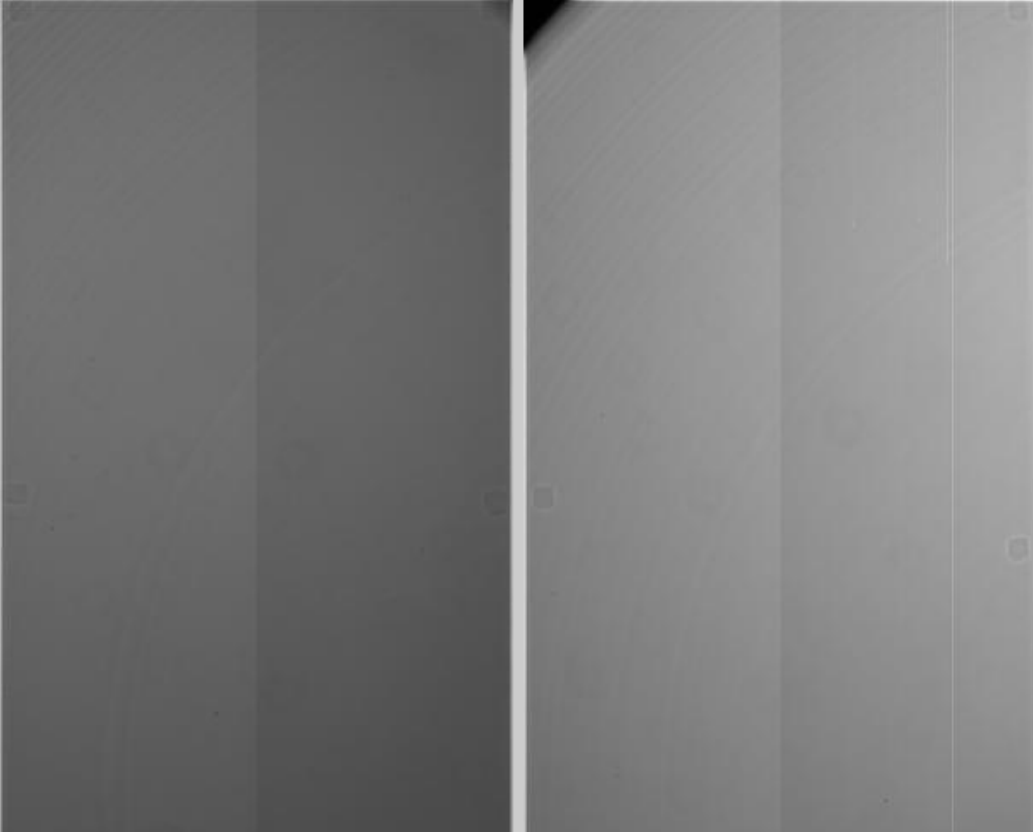
PreCam Calibration Frames

View Processes Results Comments

Flat r

Flat i

[flatcor i 01](#) [flatcor i 02](#)





Night Statistics



DA
SU

PreCam Calibration Frames

View Processes

Results

Comments

Summary

Bias

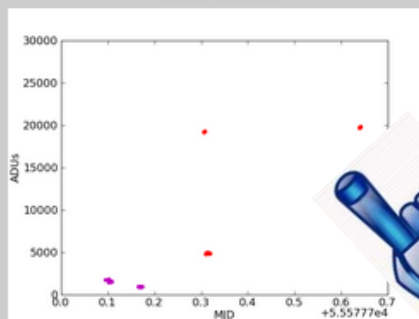
Flats

Combined Frames

Night Statistics

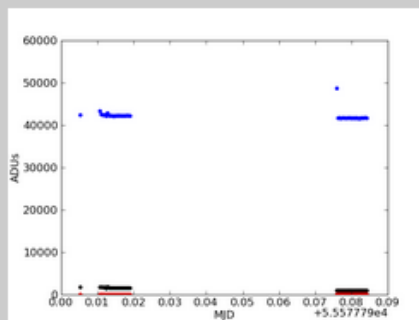
Median Counts

ADUs x MJD



Bias

ADUs x MJD





DAR
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Night Statistics



BRASIL

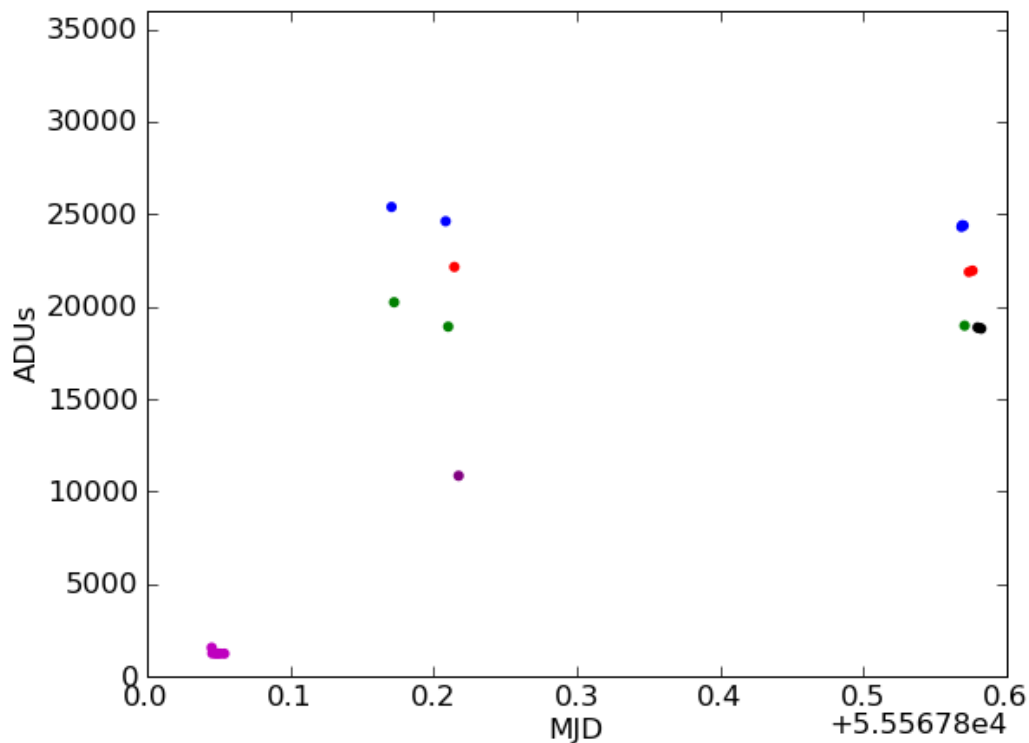
PreCam Calibration

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Comments

ADUs x MJD



ADU as a function of MJD. Magenta points represent median values for Bias, while other color points represents Flats for each filter: blue - g; green - r; yellow - i; red - z; black - Y.



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Let's save the Process



The Dark Energy Survey

Marcio Maia
Welcome to Testing portal.

Science Portal

Home Release Notes My Workspace Pipelines Tools Data Server Documentation Help Credits Other Portals Logout

My Workspace

My Processes My Comments My Space My Uploads My Export My Configurations My Developer Zone My Profile

Filter: Completed Show 10 entries Total entries: 7

First Previous 1 Next Last

<input type="checkbox"/>	PROCESS ID	START TIME	END TIME	TIME	PYPELINE NAME	STATUS
<input checked="" type="checkbox"/>	10004485	06-24-2011 12:44:39	06-24-2011 13:05:16	0:20:37	PreCam Calibration Frames	✓
<input type="checkbox"/>	10004285	06-13-2011 11:09:48	06-13-2011 13:28:50	2:19:02	PreCam	✓
<input type="checkbox"/>	10004284	06-13-2011 10:27:36	06-13-2011 10:51:25	0:23:49	PreCam Calibration Frames	✓
<input type="checkbox"/>	10003940	05-26-2011 17:16:49	05-26-2011 17:17:32	0:00:43	AddQSO	✓
<input type="checkbox"/>	10003910	05-25-2011 11:40:10	05-25-2011 11:47:02	0:06:52	PreCam	✓
<input type="checkbox"/>	10003884	05-21-2011 11:43:26	05-21-2011 11:43:48	0:00:22	PreCam	✓
<input type="checkbox"/>	10003110	03-28-2011 12:31:30	03-28-2011 14:32:45	2:01:15	PreCam	✓

Export Purge Save Share



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Reduction of Science Images



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Provenance

Search

Selection

You are in page 1. Found pages between 1 and 12

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Choose lines per page: 10

	NAME	DATE	MJD	RA	DEC	FILTER	EXPTIME
<input type="checkbox"/>	PreCam_00023499	2011-01-17	55578.078276	23.989874	-57.751032	i	65.0
<input type="checkbox"/>	PreCam_00023549	2011-01-17	55578.139691	2.37702	-52.750136	i	65.0
<input type="checkbox"/>	PreCam_00023471	2011-01-17	55578.044117	23.989873	-45.749714	i	65.0
<input type="checkbox"/>	PreCam_00023694	2011-01-17	55578.315896	9.999934	-0.000178	i	162.0
<input type="checkbox"/>	PreCam_00023676	2011-01-17	55578.294464	9.999988	-0.00032	i	5.0
<input type="checkbox"/>	PreCam_00023652	2011-01-17	55578.265285	5.60652	-57.749954	i	65.0
<input type="checkbox"/>	PreCam_00023534	2011-01-17	55578.12144	2.388881	-30.250277	i	65.0
<input type="checkbox"/>	PreCam_00023622	2011-01-17	55578.228929	2.589874	-50.250223	i	65.0
<input type="checkbox"/>	PreCam_00023633	2011-01-17	55578.242278	2.589874	-53.250332	i	65.0
<input type="checkbox"/>	PreCam_00023480	2011-01-17	55578.055106	0.00162	-47.749792	i	65.0
<input type="checkbox"/>	PreCam_00023583	2011-01-17	55578.133623	2.672631	-42.750209	i	65.0
<input type="checkbox"/>	PreCam_00023544	2011-01-17	55578.133623	2.348284	-32.753576	i	65.0
<input type="checkbox"/>	PreCam_00023571	2011-01-17	55578.166466	2.565343	-39.750269	i	65.0
<input type="checkbox"/>	PreCam_00023472	2011-01-17	55578.045325	0.010135	-45.749705	i	65.0
<input type="checkbox"/>	PreCam_00023518	2011-01-17	55578.101377	0.009821	-57.249747	i	65.0
<input type="checkbox"/>	PreCam_00023670	2011-01-17	55578.287387	5.606541	-50.749753	i	65.0
<input type="checkbox"/>	PreCam_00023576	2011-01-17	55578.172546	2.627365	-40.74972	i	65.0



Workflow Configuration



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Home PreCam Data Configuration Job Submit Documentation Help

Logout

Workflow

Retrieving Data

- ☒ Data Organizer
- ☒ Data Retriever

Detrending Images

- ☒ Split CCDs
- ☒ Imcorrect
- ☒ Join CCDs

Correcting Images

- ☒ Astrometry Correction
- ☒ DSS Astrometry Check
- ☒ Streaking Removal

Source Extraction

- ☒ Source Extraction

Characterize Pointing

- ☒ Cover

Characterize Data

Source Extraction

Advanced

Standard

Extraction

- Type of device that produced the image ☒ CCD ☐ PHOTO
- Minimum number of pixels above threshold triggering detection
- Threshold type ☒ Relative ☐ Absolute
- Detection threshold
- Analysis threshold
- Apply filter to the data before extraction ☒ Y ☐ N
- Filter threshold
- Number of deblending sub-thresholds
- Minimum contrast for deblending
- Clear catalog before write to disk ☒ Y ☐ N
- Efficiency of cleaning
- Method of masking of neighbours for photometry

Weighting

- Weighting scheme
- Consider weight maps as gain maps ☒ Y ☐ N
- Weighting threshold

Photometry



Submitting Process



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Welcome to Testing portal.

Science Portal

Home PreCam Data Configuration Job Submit Monitor Documentation Help Logout

Monitor Process

Pipeline : PreCam

User	Marcio Maia
Process	10004487
Start	Fri Jun 24 16:26:46 2011
Workflow	View
Monitor	Refresh Update in 8 seconds
	

Input Data

Input data	Astrosoft
Type	Image
Filter	Any
Date	2011-01-17
RA (deg.)	Any
Dec (deg.)	Any
Boxsize (deg.)	Any
Selected	20
[+ details]	

Block 1		Queue : 0	
Module	Time (mm:ss)	Success	Error
Data Organizer	00:00	1	0
Block 2		Queue : 0	
Module	Time (mm:ss)	Success	Error
Data Retriever	00:01	4	0



Process Ready !



PreCam

View Processes Results Comments

Process : PreCam

User	Marcio Maia
Process	10004487
Start	06-24-2011 16:26:45
End	06-24-2011 16:34:38
Process Time	0:07:53
Ingest Time	00:00:04
Expiration	06-28-2011 16:34:38
Jobs	382
Workflow	View
Code Version	View

Input Data

Input data	Astrossoft
Type	Image
Filter	Any
Date	2011-01-17
RA (deg.)	Any
Dec (deg.)	Any
Boxsize (deg.)	Any
Selected	20

+ details

Module	Time	Products	Config	Error Log	Pipeline Out	Status
Data Organizer	00:00:02	---	---			
Data Retriever	00:00:15	---	---	---	---	
Split	00:00:10	---	---	---	---	
Imcorrect	00:00:38	---	---	---	---	
Join CCDs	00:00:01	---	---	---	---	
Astrometry Correction	00:02:04	---	---	---	---	
saharStreaking	00:00:13	---		---	---	



Checking Results



PreCam

View Processes **Results** Comments

00023480 00023490 00023499

View ID Card



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Evaluation of image quality – ID Card



testing.des-brazil.org/PRJSUB/ES/showCalibrationTemplate?id=10004285&cont=0&top=reduce&exp_id=17049&single=0

Night: 2011-01-07
Expo number: 00019506
MJD: 55568.060114
RA(deg): 6.000258
DEC(deg): 0.490899
Exp. time(sec): 10.0
Type: object
Filter: z
AirMass: 1.38
Moon distance(deg): 47.77
Moon phase: 7.33%

Weather Monitor

Night Log

Fits Header



None Scattered Light

None Streaking

None Fringing

None Dark Feature

None Noise Background

Comments:

☐ Discard exposure

☐ Inspected

Save



Night Log



Night: 2011-01-12
Expo number: 00021667
MJD: 55573.355029
RA(deg): 6.628636
DEC(deg): -52.20522
Exp. time(sec): 51.0
Type: object
Filter: r
AirMass: 1.71
Moon distance(deg): 122.0
Moon phase: 47.89%

Weather Monitor

NightLog

Fits Header

Information

Night: 20110112; local time (MJD: 55573)
Observers: D Burke, J Dietrich, E Balbinot, J Peoples

Summary:

Steady observing. No interruptions to ObsTAC queue. Queue consistently runs about 20 minutes behind over course of 8 hours. Systematically misses high airmass and final standards late in the queue.

*** Almanac for the currently specified date ***:
(from <http://www.briancasey.org/artifacts/astro/almanac.cgi>)
Almanac for Cerro Tololo:
long. 4 43 16 (h.m.s) W, lat. -30 09.9 (d.m), elev. 2215 m
Chilean Daylight Savings Time used before 2 AM
2011 Mar 13 and after 2 AM 2011 Oct 9; standard zone = 4 hrs W

For the night of: Tue, 2011 Jan 11 ---> Wed, 2011 Jan 12
Local midnight = 2011 Jan 12, 3 hr UT, or JD 2455573.625
Local Mean Sidereal Time at midnight = 5 41 47.8

Sunset (2215 m horizon): 20 57 CDT; Sunrise: 6 46 CDT
Evening twilight: 22 23 CDT; LMST at evening twilight: 4 05
Morning twilight: 5 19 CDT; LMST at morning twilight: 11 02
12-degr twilight: 21 49 CDT --> 5 54 CDT; night center: 1 51 CDT

Moonset : 0 56 CDT
Moon at civil midnight: illuminated fraction 0.462
0.4 days before first quarter, RA and dec: 0 54 07, 12 06.5

The sun is down for 9.8 hr: 6.9 hr from eve->morn 18 deg twilight.

Close

Fits Header

http://testing.des-bra

http://testing.des-brazil.org/PRJSUB/ES/openFitsHeaderCon?exp_id=19116

Fits Header

Header listing for HDU #1:

```
SIMPLE = T / conforms to FITS standard
BITPIX = 16 / array data type
NAXIS = 0 / number of array dimensions
EXTEND = T
BZERO = 32768
BSCALE = 1
NEXTEND = 6
FILENAME = '/data1/images/PreCam_precam_21667.fits'
PROCTYPE = 'Raw'
PRODTYPE = 'image'
DETSIZE = '[1:4146,1:4208]'
PIXSCAL1 = 1.43
PIXSCAL2 = 1.43
UTSHUT = '2011-01-12T08:32:09.468'
DHEINF = 'MNSN fermi hardware'
DHEFIRM = '/software/products/_precam-trunk/config/Macros/descb_6.9_withsync_c1'
SLOT00 = 'MCB 0x0 4.620000'
SLOT02 = 'DESCB 0x0 10.240000'
SLOT04 = 'CCD12 0xAF31B1 4.030000'
OBS-LONG = '70:49:00 W'
TELESCOP = 'UM Curtis Schimdt'
OBSERVAT = 'CTIO'
OBS-LAT = '-30:09:54'
OBS-ELEV = 2215.0
INSTRUME = 'PreCam'
EXPREQ = 51.0
EXPTIME = -1.0
DARKTIME = 0.0
DATE-OBS = '2011-01-12 08:31:14.482678+00:00'
TIME-OBS = '08:31:14.482678'
MJD-OBS = 55573.35502873454
RADESYS = 'FK5'
TIMESYS = 'UTC'
TELEQUIN = 2000.0
EXPNUM = 21667
OBJECT = 'precam2170_16'
ORSTYPE = 'object'
```

Night: 2011-01-12

Expo number: 0002

MJD: 55573.355029

RA(deg): 6.628636

DEC(deg): -52.205

Exp. time(sec): 51.

Type: object

Filter: r

AirMass: 1.71

Moon distance(deg)

Moon phase: 47.89

Weather Monitor

Night Log

Fits Header

Scatt

Strea

Fringi

Dark

Noise

ents:

card exposur

pected

Results – Astrometric Comparison

testing.des-brazil.org/VP/getViewProcessCon?pro=10004285

PreCam

View Processes

Results

Comments

Summary

Science Frames

Calibration Frames

Night Statistics

Sorted by MJD

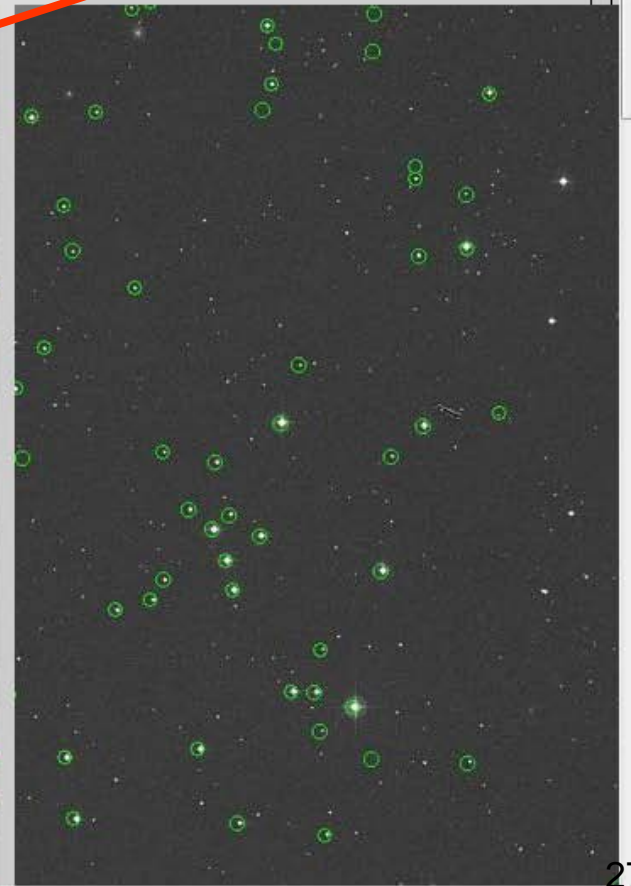
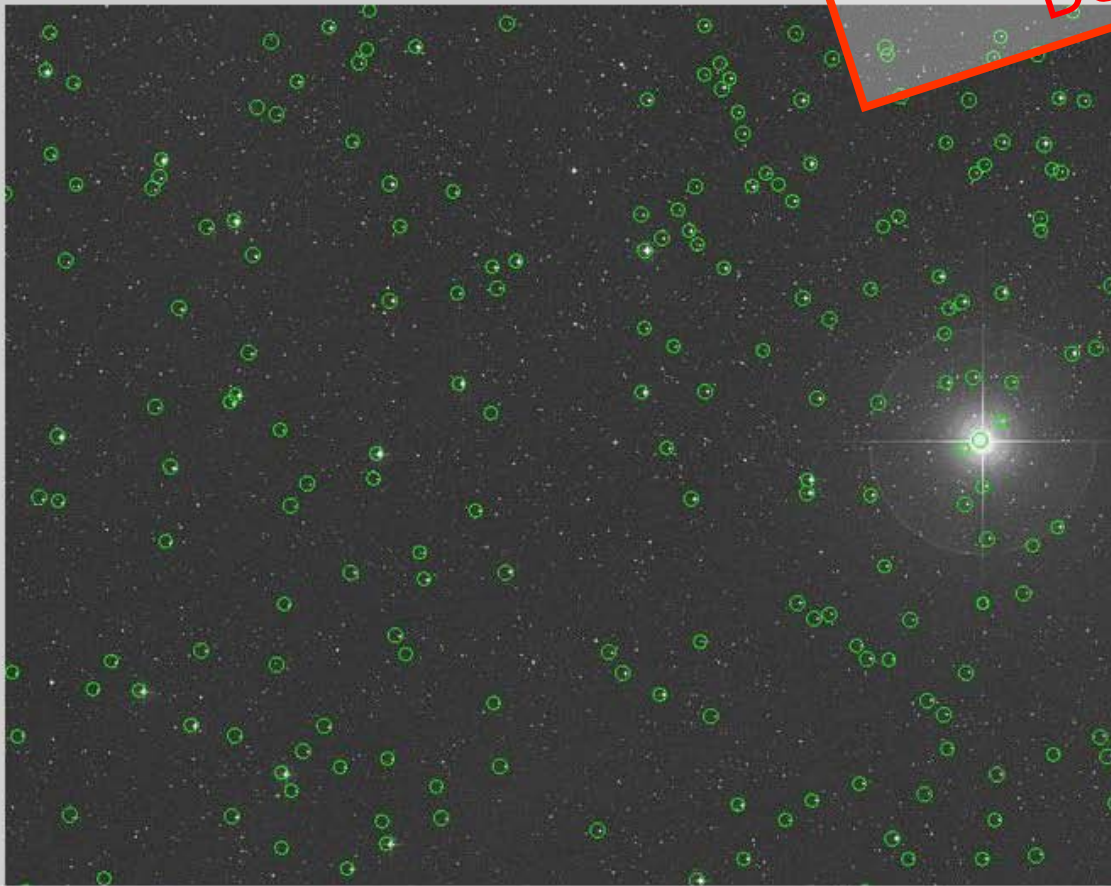
Grouped by Filter

Astrometric Comparison

00019504

00019510

You may check your
astrometric solution with
DSS images



Results – Night Statistics

testing.des-brazil.org/VP/getViewProcessCon?pro=10004285

PreCam

View Processes

Results

Comments

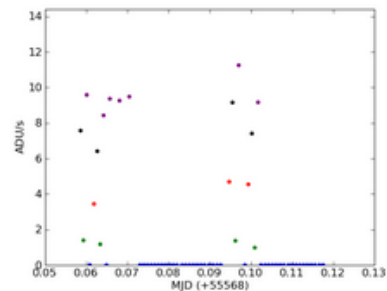
Summary

Science Frames

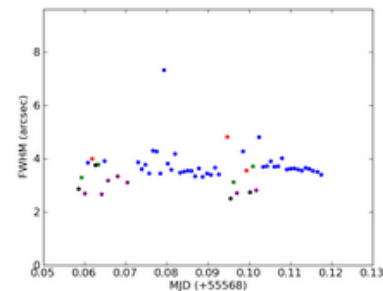
Calibration Frames

Night Statistics

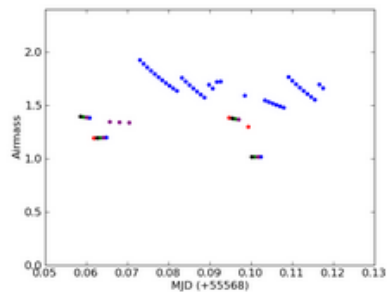
Sky Brightness



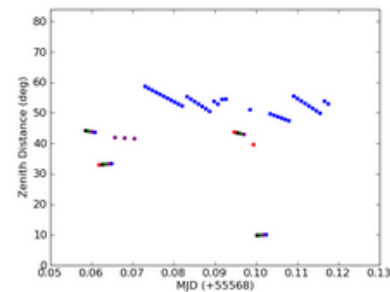
Seeing



Airmass



Zenith Distance (from Airmass)



Zenith Distance (from header)



View Process



http://testing.des-brazil.org/VP/getViewProcessCon?pro=10005941

PreCam Science

View Processes Results **Comments**

This is a comment to the people of Science Portal Review @ UPenn

You can add comments to the process

Save Comment

Release Date: Sun Oct 2 2011 - 00:00: [testing portal]



DARK ENERGY
SURVEY



The Reduction Pipeline

+

Portal Environment



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Observations Viewer Tool



The Dark Energy Survey

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Science Portal

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Administration
Code Manager
Simulation Manager

Survey ▶ PreCam ▶ Observations Viewer
Database DeCam ▶ Data Reduction Viewer

[First](#) [Previous](#) [1](#) [2](#) [3](#) [4](#) [5](#) [Next](#) [Last](#)

Night	MJD Start	MJD End	First Exposure ID	Last Exposure ID	
01-20-2011	55580.774125	55581.137239	24048	24199	
01-19-2011	55579.764924	55580.400451	23713	24047	
01-18-2011	55578.737876	55578.737876	23712	23712	
01-17-2011	55577.792286	55578.342142	23329	23711	383
01-16-2011	55576.76903	55577.377716	22970	23328	358
01-15-2011	55575.792306	55576.387003	22546	22969	424
01-14-2011	55574.795829	55575.387197	22134	22545	412
01-13-2011	55573.776447	55574.387424	21703	22133	431
01-12-2011	55572.828769	55573.385826	21291	21702	412
01-11-2011	55571.801557	55572.387645	20892	21290	399



Data Reduction Viewer



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Data Reduction Viewer

Select a night: All Nights

Calibration frames **Science frames**

Show 10 entries
Total entries: 45

First Previous 1 2 3 **4** 5 Next Last

Night	Process ID▲	Duration	Date Saved	#g	#r	#i	#z	#Y	Total	Exposure Status	Summary	Night Status
2011-01-07	10004225	0:07:26	2011-06-10 09:24:06	16	28	2	2	2	50			
2011-01-07	10004215	0:04:48	2011-06-27 11:24:42	4	28	2	23	20	77			
2011-01-19	10004031	0:04:30	2011-06-02 13:39:23	229	28	2	23	20	302			
2011-01-07	10003984	1:34:30	2011-05-30 17:19:32	229	28	18	23	20	318			
2011-01-20	10003736	0:21:15	2011-05-12 15:34:04	230	28	75	23	20	376			
2011-01-20	10003475	0:06:48	2011-04-15 11:24:23	230	28	3	23	20	304			
2011-01-07	10003161	0:44:53	2011-03-30 10:59:03	230	28	19	23	20	320			
2011-01-10	10003154	0:38:42	2011-03-29 16:18:08	151	19	22	41	19	252			
2011-01-10	10003142	1:55:14	2011-03-29 13:20:39	76	11	11	22	12	132			
2011-01-08	10003076	0:06:13	2011-03-25 16:28:27	2	3	1	3	2	11			



Status Viewer Tool



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http://testing.des-brazil.org/#

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Status Viewer

Show 10 entries
Total entries: 60

First Previous 1 2 3 4 5 Next Last

Night	Ingested	Calibrated	Reduced	Saved	Inspected	Transferred	History
2011-01-20	2011-03-05	2011-03-14	2011-09-30	2011-08-05	No date registered	---	
2011-01-19	2011-03-05	2011-08-11	2011-06-02	2011-06-02	---	2011-06-16	
2011-01-18	2011-03-05	---	---	---	---	---	
2011-01-17	2011-03-05	---	2011-03-31	---	---	---	
2011-01-16	2011-03-04	---	2011-04-07	---	---	---	
2011-01-15	2011-03-04	---	---	---	---	---	
2011-01-14	2011-03-04	---	2011-03-17	2011-03-17	---	---	
2011-01-13	2011-03-04	---	---	---	---	---	
2011-01-12	2011-03-04	2011-09-14	2011-09-14	2011-09-14	---	---	
2011-01-11	2011-03-04	---	---	---	---	---	



Data Transfer Tool



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The Dark Energy Survey

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Data Transfer Viewer

Show 10 entries
Total entries: 5

First Previous 1 Next Last

Date ▼	Time	Process ID	Pipeline Name	Sender	Route	Duration(h)	Size(GB)	Rate(Mbps)	View Log	Status
---	---	10003076	PreCam	Angelo Fausti	LINEA>FNAL	---	---	---	---	
---	---	10003142	PreCam	Angelo Fausti	LINEA>FNAL	---	---	---	---	
---	---	10003475	PreCam	Angelo Fausti	LINEA>FNAL	---	---	---	---	
---	---	10003736	PreCam	Angelo Fausti	LINEA>FNAL	---	---	---		
2011-06-16	03:25:11	10004031	PreCam	Angelo Fausti	LINEA>FNAL	0:09:45	0.63	8.77		

Queued In Progress Success Failed



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“Real time” reductions



DARK ENERGY
SURVEY

Quick Reduce overview



- Quick Reduce (QR) is a tool to **provide observers with automated feedback** regarding the quality of the DeCam data being collected during a night of observation.
- QR shares the same code infrastructure of the DES-Brazil Science Portal and Precam reduction pipeline.

The image shows the login page of the DES CTIO Portal. The header features the text "DES CTIO Portal" on the left and a photograph of several astronomical observatories on the right. The main content area is a light gray box with the title "Login" and a message "You logged out the DES-CTIO Portal." Below this are two input fields labeled "User Name:" and "Password:", followed by a "Login" button. At the bottom of the box, there is a link "I am not registered" and a note about browser compatibility: "This portal is best viewed with: Mozilla Firefox version 3.0.14 or higher and Safari 4.0.4 or higher." The footer of the page includes the Firefox and Safari logos.



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1. Select the CCDs to be processed



- The user can force a particular CCD or a list of CCDs to be reduced, use predefined configurations (ring, cross, etc) or even process ALL CCDs

Home Release Notes My Workspace Pipelines Tools Documentation Help Logout

QR Configuration

Workflow Test environment

Workflow

Detrend

☒ Split FoV

Source Extraction

☒ Source Extraction

☒ Stellar Catalog Preparation

Image Characterization

☒ Quality Assessment

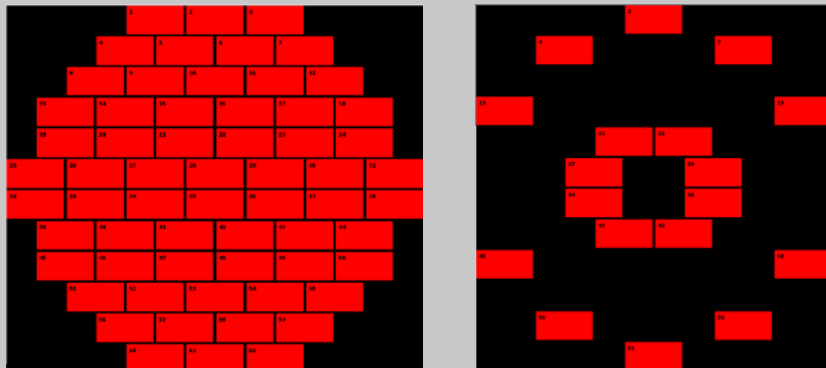
Save Config

Split FoV

FoV Setup

FoV Set rings

CCD# 34





DARK ENERGY
SURVEY

2. Source Extraction parameters



The user is able to modify SExtractor standard and advanced parameters

Workflow

Detrend

☒ Split

Source Extraction

☒ Source Extraction

Characterize Image

☒ Quality Assessment

Save Config

Source Extraction

Advanced Standard

Extraction	
Type of device that produced the image	<input checked="" type="radio"/> CCD <input type="radio"/> PHOTO
Minimum number of pixels above threshold triggering detection	5
Threshold type	<input checked="" type="radio"/> Relative <input type="radio"/> Absolute
Detection threshold	10.0
Analysis threshold	10.0
Apply filter to the data before extraction	<input checked="" type="radio"/> Y <input type="radio"/> N
Filter threshold	1
Number of deblending sub-thresholds	32
Minimum contrast for deblending	0.005
Clear catalog before write to disk	<input checked="" type="radio"/> Y <input type="radio"/> N
Efficiency of cleaning	1.0
Method of masking of neighbours for photometry	Correct

Weighting



DARK ENERGY
SURVEY

3. Quality Assessment



- On the quality Assessment configuration the user set the accepted limits on problems related to PSF and PSF distortion, sky noise and the number of detected stars
- In case the measured values are beyond the accepted limits **QR send alert messages to the telescope control system.**

QR Configuration

Data reduction mode | **Workflow** | **Test environment**

Workflow

Detrend

☒ Split

Source Extraction

☒ Source Extraction

Characterize Image

☒ Quality Assessment

Save Config

Quality Assessment

FWHM | **Distortion** | **Sky Background** | **Number of Stars**

Typical Value	
Typical FWHM value (arcsec)	1.0

Maximum Value	
Maximum accepted FWHM value (arcsec)	2.0



“AUTOMATIC” reductions



DARK ENERGY
SURVEY

Monitoring new images aquired by the telescope and
unattended reductions...

[Home](#) [Release Notes](#) [My Workspace](#) [Pipelines](#) [Tools](#) [Documentation](#) [Help](#) [Logo](#)

Monitor

Quick Reduce

Exposures

Reduction Mode

☒ AUTOMATIC ☐ MANUAL

Quick Reduce Control

START

Reset

Configure

Last Exposure Info

Exposure ID: 23013
RA: 334.59439
Dec: -42.3
Filter: z

New Exposures

2012-03-25 04:24:40 Quick Reduce STOPPED.
2012-03-25 04:24:38 **EXPOSURE ID 23647, decam--25--42-z-9_00023647.fits**
2012-03-25 04:21:21 **EXPOSURE ID 23645, decam--25--42-z-9_00023645.fits**
2012-03-25 04:18:18 **EXPOSURE ID 23644, decam--25--42-z-9_00023644.fits**
2012-03-25 04:15:06 **EXPOSURE ID 23642, decam--25--42-z-9_00023642.fits**
2012-03-25 04:14:40 Quick Reduce STARTED.
2012-03-25 04:14:29 Reduction mode set to AUTOMATIC.
2012-03-25 04:14:29 Initializing Quick Reduce...

Reduction Processes

2012-03-25 04:24:12 Waiting for reduction requests...
2012-03-25 04:24:12 End process 10006333, duration 170.51s
2012-03-25 04:21:21 **Start process 10006333, EXPOSURE ID 23645**
2012-03-25 04:20:54 Waiting for reduction requests...
2012-03-25 04:20:54 End process 10006332, duration 156.44s



DARK ENERGY
SURVEY

Reduced Images



- List of reduced images
- Image viewer

Home Release Notes My Workspace Pipelines Tools Documentation Help

Monitor

Quick Reduce Exposures

View results

NIGHT 2010-10-27 ▼ all object ▼ TY

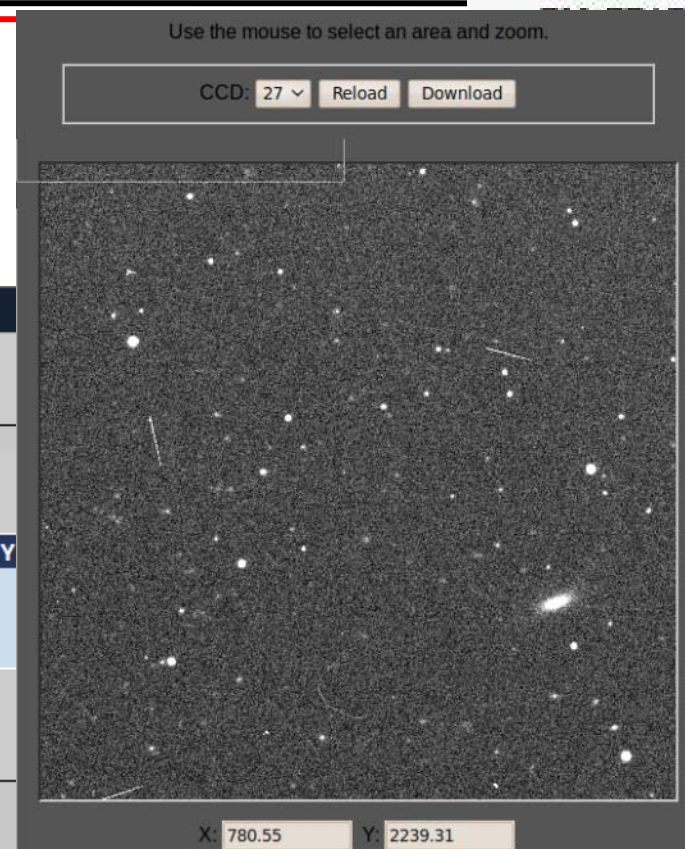
Search

Raw Reduced

Results

Show 10 ▼ entries

Exposure ID	Hex	Tile	RA(deg)	Dec(deg)	MJD	Filter	# of CCDs Reduced	Process ID	Start	Duration	View Reduced Image
22994	---	---	334.59439	-42.3	55497.110417	z	---	10006317	2012-03-23 17:43:41	00:02:30	
22999	---	---	334.59439	-42.3	55497.110417	z	---	10006319	2012-03-23 20:40:26	00:02:40	
23000	---	---	334.59439	-42.3	55497.110417	z	---	10006320	2012-03-23 20:43:09	00:02:34	
23001	---	---	334.59439	-42.3	55497.110417	z	---	10006321	2012-03-23 20:45:45	00:02:15	
23002	---	---	334.59439	-42.3	55497.110417	z	---	10006322	2012-03-23 20:48:03	00:02:47	
23003	---	---	334.59439	-42.3	55497.110417	z	---	10006323	2012-03-23 20:50:53	00:02:05	
23004	---	---	334.59439	-42.3	55497.110417	z	---	10006325	2012-03-25 15:51:55	00:02:35	





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SURVEY

“MANUAL” reductions



- Raw images can be **reprocessed** for tuning the QR configuration parameters and day-time tests

Home Release Notes My Workspace Pipelines Tools Documentation Help Logo

Monitor

Quick Reduce Exposures

View results

NIGHT TYPE FILTER

2010-10-27 v all object all z

Search

Raw Reduced

Select raw images for reduction

List of Raw Images

Show 10 v entries

	Exposure ID ▲	Hex	Tile	RA(deg)	Dec(deg)	MJD	Filter	Status	FITS Header	View Raw Image
<input type="checkbox"/>	23013	---	---	334.59439	-42.3	55497.110417	z	---		
<input type="checkbox"/>	23012	---	---	334.59439	-42.3	55497.110417	z	✓		
<input type="checkbox"/>	23011	---	---	334.59439	-42.3	55497.110417	z	✓		
<input type="checkbox"/>	23010	---	---	334.59439	-42.3	55497.110417	z	✓		
<input type="checkbox"/>	23009	---	---	334.59439	-42.3	55497.110417	z	✓		
<input type="checkbox"/>	23008	---	---	334.59439	-42.3	55497.110417	z	✓		

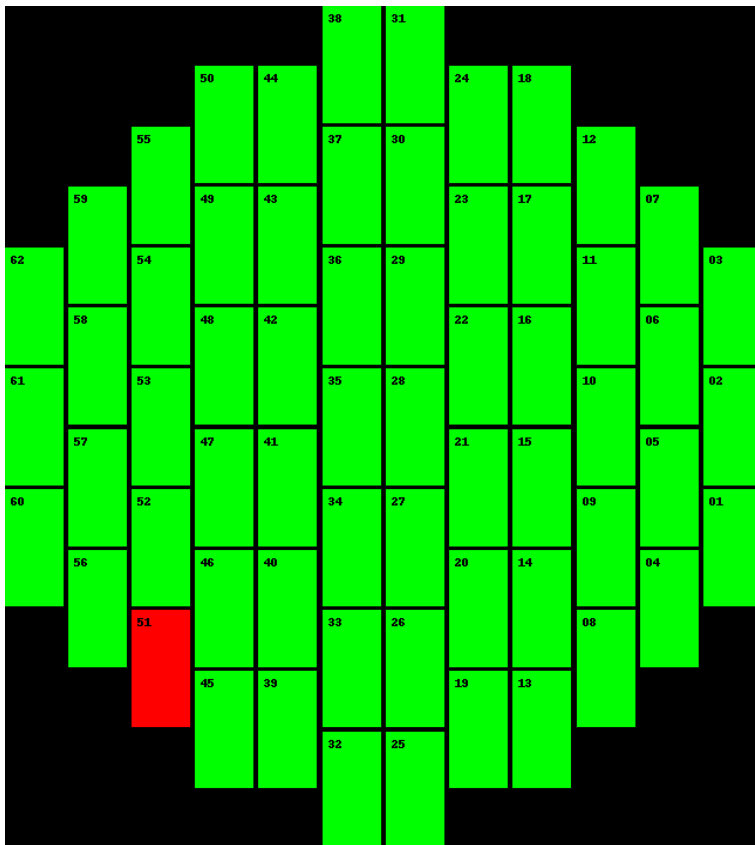


QR global and local tests

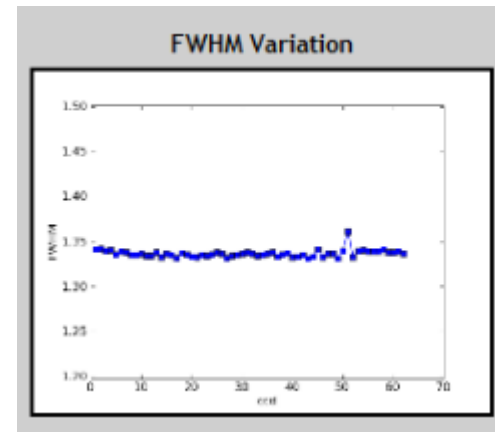


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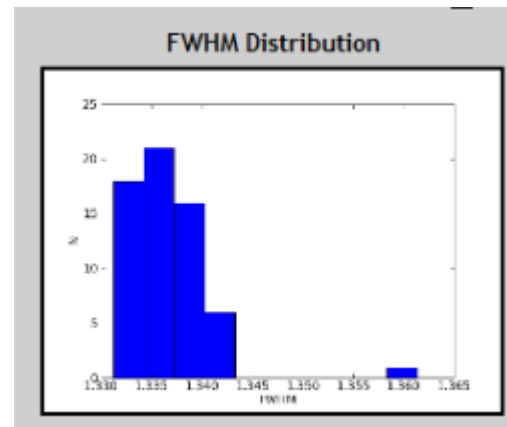
CCDs that have been examined and **failed** the Quality Assessment constraints specified by the user **are showed in red.**



Variation of the mean PSF as a function of CCD#



Histogram of the PSF for the selected CCD



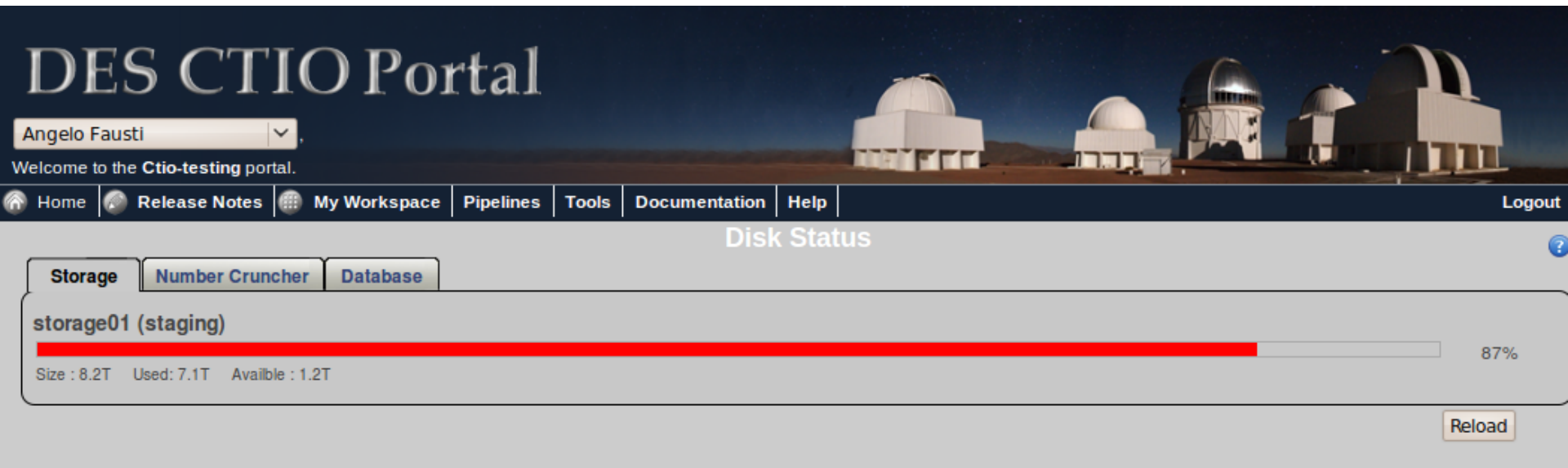


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Disk monitor



- Disk-full warnings
- Garbage collector



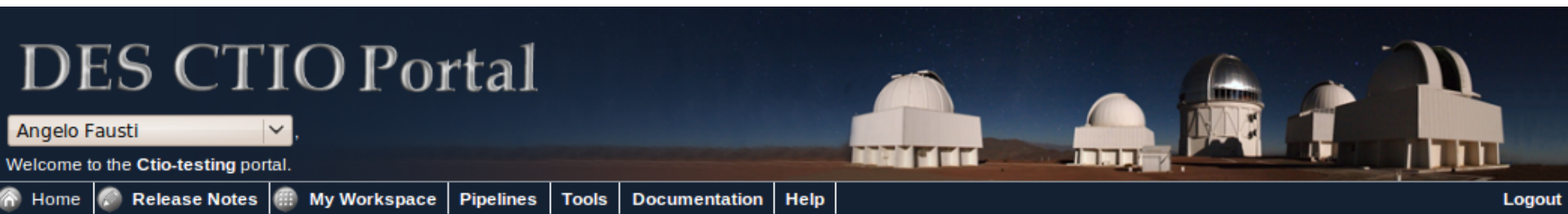


DARK ENERGY
SURVEY

Documentation



- Guide for Observers
- Online help for each screen ?



CTIO portal at Blanco

- [1 Introduction](#)
- [2 Quick Reduce](#)
 - [2.1 Configuration](#)
 - [Starting the QR daemon](#)
 - [The QR workflow](#)
 - [2.2 Results](#)
 - [2.3 Recommendations and Troubleshooting](#)
 - [2.4 Night reports and footprint](#)
- [3 Future Implementations](#)
- [4 Contact us](#)

1 Introduction

The CTIO portal is being designed to support:

1. A pipeline to produce master calibrations from flats and bias from a set selected by the observers
2. A pipeline to complete reduce science frames
3. An automatic tool to "Quick Reduce" and assess the quality of an image recently observed.



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Helpdesk



- Ticket system for issue tracking and user feedback

DES CTIO Portal

Angelo Fausti ▾

Welcome to the **Ctio-testing** portal.

[Home](#) [Release Notes](#) [My Workspace](#) [Pipelines](#) [Tools](#) [Documentation](#) [Help](#) [Logout](#)

Help Desk

Pipeline: Portal ▾

Subject:



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The End



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SURVEY



Extra Slides



Reduction Calib Frames



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Science Portal

Home **PreCam Calibration Frames** Data Configuration Job Submit Monitor Documentation Help Logout

Start Fri Jun 24 12:44:37 2011
Workflow [View](#)
Monitor [Refresh](#) Update in 21 seconds

Input Data

Input data	Astrosoft
Type	Image
Filter	Any
Date	2011-01-17
Calibtype	Any
Selected	121
[+ details]	

Monitor Process

Block 1				Queue : 0
	Module	Time (mm:ss)	Success	Error
	Data Organizer	00:00	1	0
Block 2				Queue : 0
	Module	Time (mm:ss)	Success	Error
	Data Retriever	02:26	121	0
	Split	02:29	121	0
Block 3				Queue : 0
	Module	Time (mm:ss)	Success	Error
	Organize CCDs	01:08	86	0
Block 4				Queue : 1
	Module	Time (mm:ss)	Success	Error
	Calibration	---	0	0

Release Date: Fri Jun 24 2011 - 00:00:02

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Workflow Configuration



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Home PreCam Data **Configuration** Job Submit Documentation Help Logout

Workflow

Retrieving Data

- ☒ Data Organizer
- ☒ Data Retriever

Detrending Images

- ☒ Split CCDs
- ☒ Incorrect
- ☒ Join CCDs

Correcting Images

- ☒ Astrometry Correction
- ☐ DCS Astrometry Check
- ☒ Streaking Removal Sahar Streaking Removal

Source Extraction

- ☒ Source Extraction

Characterize Pointing

- ☒ Cover

Characterize Data

Streaking Removal

General

Left Border Offset	56
Top Border Offset	49
Right Border Offset	58
Bottom Border Offset	0
General Border Offset (overwrites offsets above if not zero)	0

Release Date: Fri Jun 24 2011 - 00:00:02

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Ultimate Goal



Full automatic processing and +

- 1- Data transfer CTIO to Rio (end of night)
- 2- Data ingestion in database (in Rio)
- 3- Raw data transfer to FERMILAB
- 3- Data automatically reduced
- 4- Reduced data saved in database
- 5- Reduced data transferred to FERMILAB
- 6- Feed-back about bad frames to OBSTAC
- 7- Tool for analysis of PreCam data in the Science Portal



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The Quick Reduce pipeline



- QR splits the DECam field-of-view into individual CCDs.
- Apply bias, flat field and over scan corrections.
- Run SExtractor to produce a star catalog.
- Measure mean PSF and PSF distortion, number of detected stars and background counts on each CCD.
- Quality Assessment: compare measured values with predefined limits by the observer.



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Selection & Configuration Summary



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Science Portal

Home

PreCam

Data

Configuration

Job Submit

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Selection Summary

INPUT DATA	TYPE	FILTER	DATE	RA	DEC	BOXSIZE	SELECTED	STATUS
Astrosoft	Image	--	2011-01-17	--	--	--	20	✓

Configuration Summary

Module	Config Mode	
Streaking Removal	Default Settings	Change Config
Source Extraction	Default Settings	Change Config
Addflags	Default Settings	Change Config

Change Selection Submit Job



Observations Viewer Tool



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Home Release Notes My Workspace Pipeline **Tools** Data Server Documentation Help Credits Other Portals Logout

Observation Viewer

Nights **Statistics** View Exposures

Statistics: Science Exposures

Show 10 entries
Total entries: 8

First Previous 1 Next Last

Night	#g	#r	#i	#z	#Y
2011-01-20	2	2	94	2	2
2011-01-19	2	2	3	2	2
2011-01-14	2	2	2	2	2
2011-01-12	16	13	9	7	5
2011-01-10	378	49	55	104	50
2011-01-09	11	12	1	3	4
2011-01-08	11	83	12	26	14
2011-01-07	594	77	56	79	69

Release Date: Wed Oct 5 2011 - 12:13:23

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