

Quick Reduce v1.1

Start-up Guide for Observers

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DES-doc #6705

<http://quick1.ctio.noao.edu:8080>

Login: DECamObserver / blanco

Aug 28, 2013

Abstract

This is a start-up guide for users of the Quick Reduce (QR) pipeline hosted by the DES CTIO portal (hereafter CTIO portal).

QR is a flexible tool to provide the reduction of CCD images obtained by DECam, including several diagnostics about image quality. The CTIO portal is a simplified spin-off of the DES Science Portal, sharing the same architecture and facilities. The main focus of the present document is to present a brief description of the basic operation of QR and the product log it produces. It is intended as a quick guide for DES observers.

I. CTIO portal

1) *How to Access*

The access to the portal is made through the URL <http://quick1.ctio.noao.edu:8080/#> available from Observer2 console (see also section IV).

It is required a user name and a password (see Figure 1) which is common for all observers at CTIO

User Name: DECamObserver

Password: blanco

in case of problems to login the user name and password should be requested to the DES run manager. The operation of QR for non-DES users of DECam will not be covered in the present document.

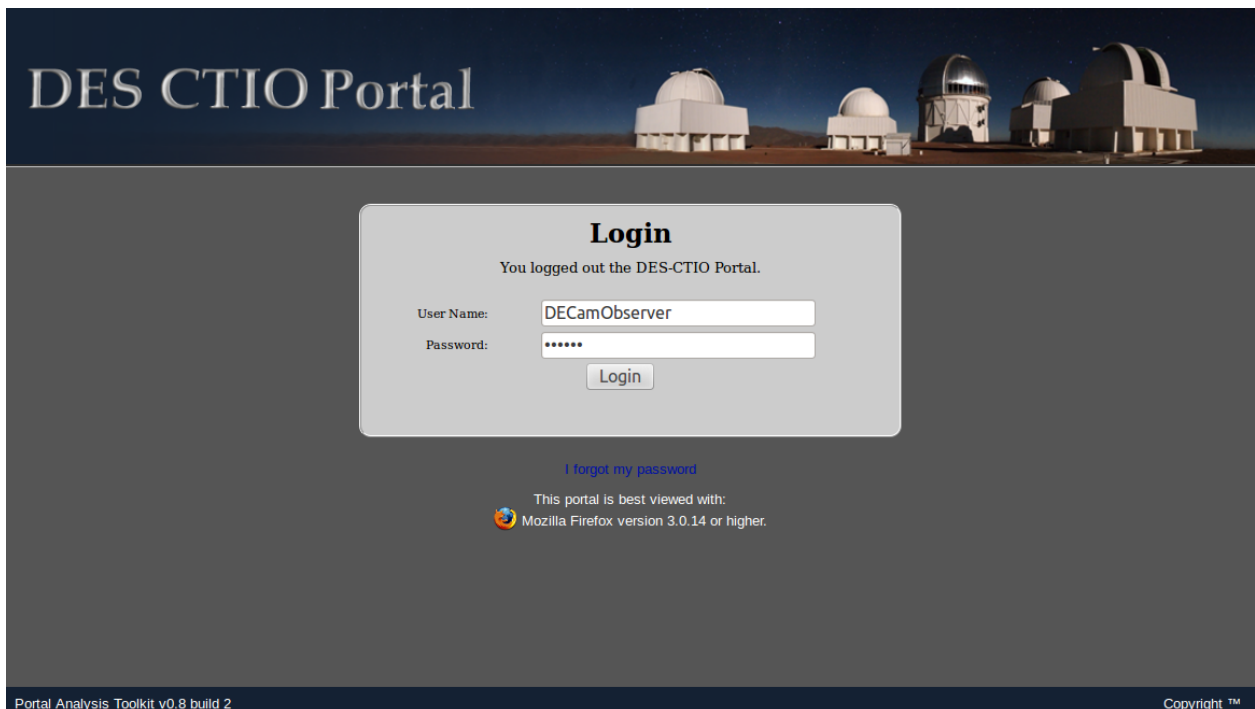


Figure 1- Front page of DES CTIO Portal.

2) *Getting a monitor account*

- These accounts are open by the administrators of the CTIO portal (helpdesk@linea.gov.br) to people not physically at the telescope but which are authorized by the collaboration to monitor QR results accessing the CTIO VPN .
- This type of account does not give access to critical functionalities such as start/stop reductions, select configuration or submit reductions in manual mode. The intention is to form a special group that will receive shared products for evaluation, if necessary.

NOTE: CTIO portal requires Mozilla Firefox

3) *Contents*

The CTIO portal includes two distinct workflows:

- **Quick Reduce (QR)** – designed as a real-time system to assist the observer in assessing the quality of the images taken by DECam. It can also be used for unsupervised reductions of DECam exposures.
- **DECam calibration pipeline** – used to produce master flats and bias frames using versions of the DESDM system (under development).

NOTE: the master bias and flats used by QR come from the FISRTCUT pipeline and are installed from time to time by CTIO portal administrators.

4) *Definitions*

Upon entering the CTIO portal the user is presented with a very high-level description of it and on the top several tabs (Figure 2) which include:

- **My Workspace** – gives the user access to several facilities, most of which are still under development for the QR:
 - **My Processes:** all processes carried out previously (complete, incomplete, saved) from which the corresponding product logs can be reached. From here processes can be shared with individuals or a group.
 - **My Comments:** Processes with comments made by the owner or by others with which the owner shared the process.
 - **My Space:** Products created by the processes from where they can be downloaded or viewed (under development).
 - **My Uploads:** List of images that have been uploaded by hand (under development).
 - **My Exports:** List of processes that have been exported out of the system.
 - **My Configurations:** The configuration used for the different pipelines and their modules (under development).

- **My Profile:** Information about the user login, the groups to which the user belongs (more relevant in the case of the Science portal), and from where the user (in case of monitoring accounts) can change his/her password.
- **Pipelines** – from where the calibration (*DECam-mastercal*) can be reached (under development) used to reduce and combine bias and dome flats to produce master calibrations exposures which are in turn used by QR.
- **Quick Reduce** – gives the user access to the **QR Monitor**, discussed in more detail below.
- **Tools** – this tab is only accessible by administrators of the system.
- **Release Notes** – notes about each version of the CTIO portal. It reports changes in the pipeline, bug fixes, known issues that the user should be aware of, and changes in the database schema.
- **Documentation** – gives the user of the portal access to this documentation and for authorized users access to pages in the LIneA wiki relevant to the development and maintenance of the QR.
- **Help** – gives the user access to a compilation of frequently asked questions (FAQ) and to an e-mail form from which questions and suggestions can be submitted to helpdesk@linea.gov.br.



DES CTIO Portal

DECam Observer,
Welcome to the **Quick1** Portal at Ctio.

Home My Workspace Pipelines Quick Reduce Tools Release Notes Documentation Help Logout

CTIO production environment
August, 2012 (v0.8-2)

This version of the CTIO portal runs at LIneA test environment. The following services are available:

- a pipeline for producing master calibration frames (under development)
- the **Quick Reduce** tool

The introductory documentation for using Quick Reduce is available at **Documentation > Guide for Observers**

Please, report bugs and/or comments to the LIneA IT team using the e-mail helpdesk@linea.gov.br

Coordinator: [Luiz Nicolaci da Costa](#)
Technical Contact: [Angelo Fausti Neto](#) (Skype: angelofausti)

Portal Analysis Toolkit v0.8 build 2 Copyright TM

Figure 2 - Home page of the CTIO portal from which the QR monitor can be accessed by pressing the tab Quick Reduce.

II. Quick Reduce

By clicking on the Quick Reduce menu option available in the main page of the CTIO portal one accesses the QR monitor. A screen shot of the monitor is shown in Figure 3.

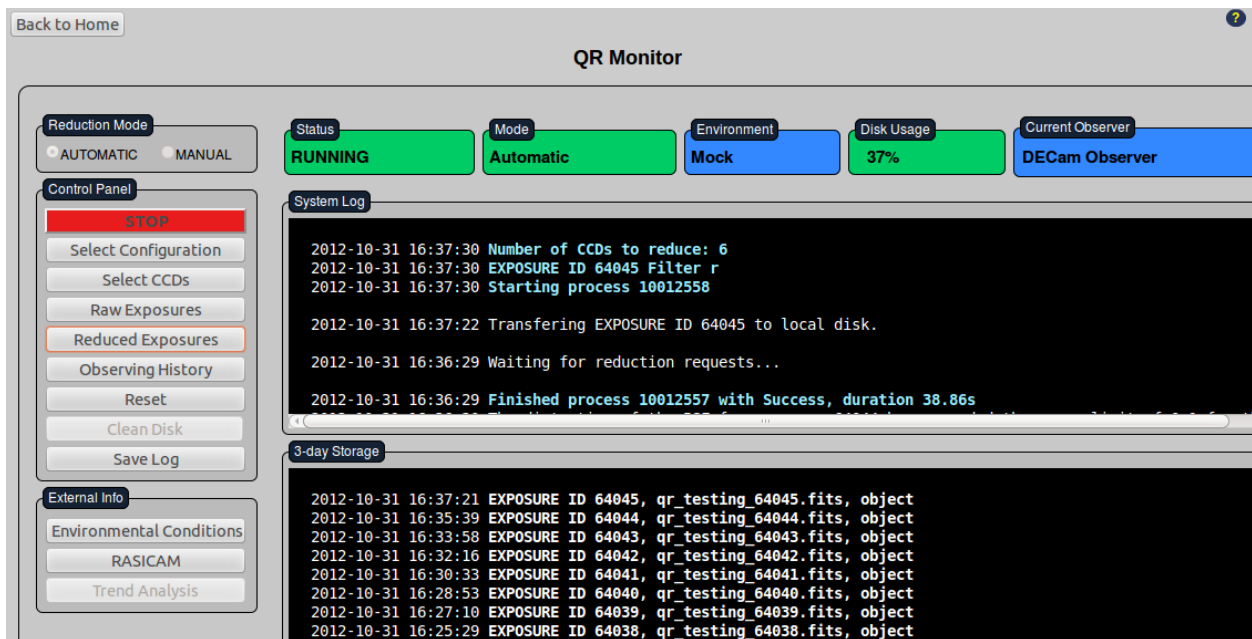


Figure 3 - Screen shot of the QR monitor.

In the upper part of the screen there are colored boxes showing:

- **Status** (*Running, Idle*);
- **Mode** (*Manual, Automatic*): In normal operation QR runs in the Automatic mode;
- **Environment** (*SISPI, Mock*): the testing environment is only used by developers, must be always set to SISPI at CTIO.
- **Disk Usage**: expressed in terms of the percentage of disk space available used so far. This space holds both raw and reduced images;
- **Current Observer**: currently only shows DECAM observer. In the future it should distinguish between DES observers and general users.

To the left there are three groups of controls:

- **Reduction Mode**: In the *Automatic* mode, which should normally be used during the night, QR reduces every image arriving, as indicated in the “3-day storage” log, according to a pre-defined configuration and a CCD pattern. The transferring of the exposures to the local disk is indicated on the “System Log”.

NOTE: In the *Automatic* mode, if QR is busy it skips new exposures until the current processing is finished.

- In the **Manual** mode the user has to click the button **Raw Exposures** that gives access to the list of raw images from where the user can select one or several exposures to reduce;
- **Control Panel:** It consists of the following commands:
 - **Start/Stop:** to start and stop the **Automatic** and **Manual** modes. In the latter case the exposures are submitted from a screen that is shown when the **Start** button is pressed. This screen has the same format as that presented below, listing all the raw exposures night.
 - **Select Configuration:** As illustrated in detail in Figure 4, by pressing this button the user has access to a screen from which the configuration for the workflow, environment, and alerts due to anomalies can be chosen. In the case of the workflow one also has access to the parameters used by the individual modules, including those that control the QA parameters. Configurations can be saved and set as default. Alternatively, the user may select a previously defined configuration as shown in Figure 5. Alerts to the QR monitor and to SISPI can be configure here as well.

NOTE: There is a **DES Default** configuration that is previously selected for DES observations but the observer is free to change that.

- **Select CCDs:** Selection of the pattern of CCDs to be used. The user can choose among several pre-defined patterns as shown in Figure 6 or select them by hand by pressing over the desired CCDs. Finally, an interesting option is the **Random** selection. It allows the user to specify the number of CCDs to be selected randomly. In this option, using the automatic mode, the entire FoV is sampled in n subsequent exposures where $n = \lceil 62 / (\# \text{ of randomly selected CCDs}) \rceil$. This choice is useful during observations taking into account the time of exposures and the time taken to reduce a given number of CCDs.

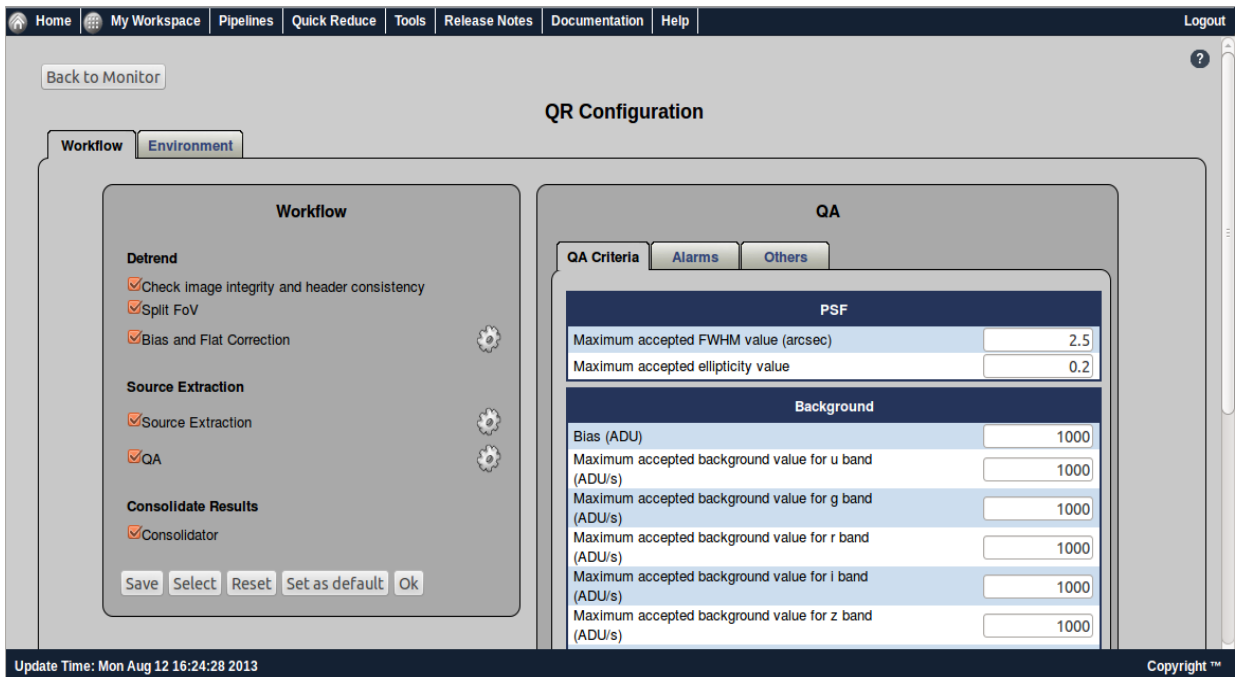


Figure 4- Workflow configuration. The checkboxes define the workflow. Pressing the gear icons provide access to the configuration files of the associated module.

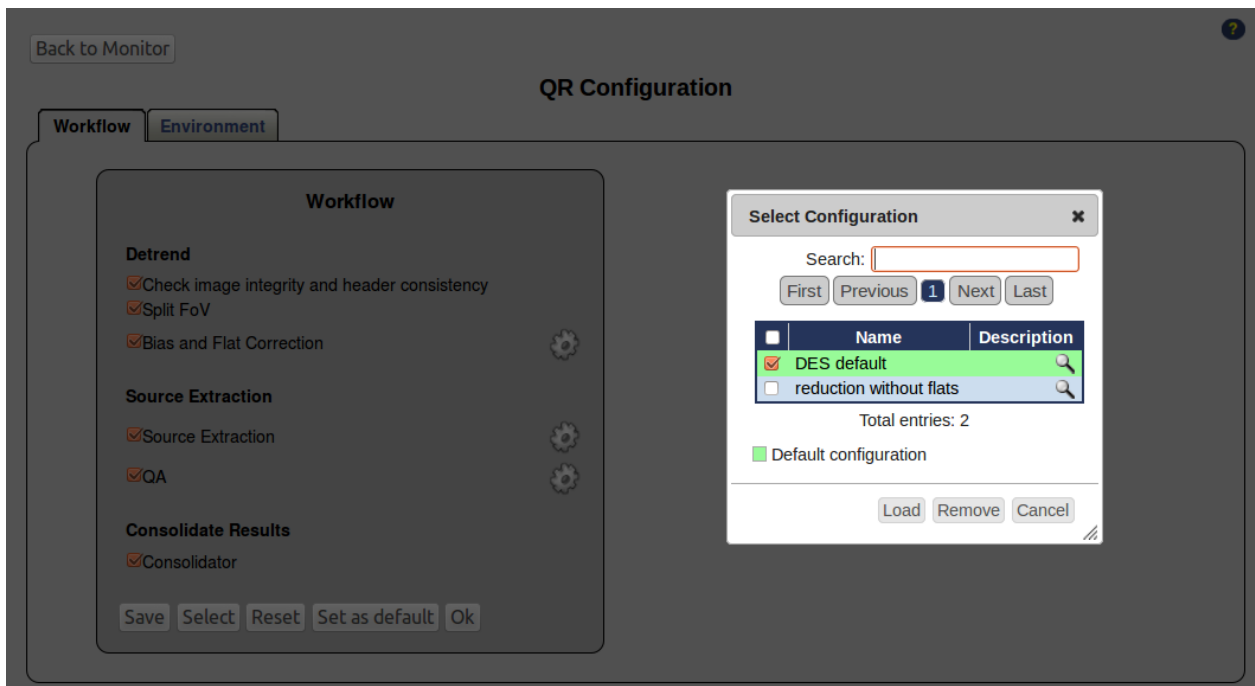


Figure 5 - Example of a list of previously defined configuration files that can be selected by the user.

Figure 7 - List of raw exposures associated to the selected night in the pull-down available at the upper left corner of the screen. The pull-down lists all the survey nights even if the raw files are no longer available in the three-day storage.

- o **Reduced Exposures:** pop-up listing the exposures reduced by QR (Figure 8). The selection on the top of the screen allows the user to filter by date and by filter. The default is the current night and “all” filters.

As in the case of the raw frames the user should enable the refresh button to allow for automatic update. There is an icon to access FITS viewer tool (under development).

By pressing the link associated to the exposure number, the user can access the product log described below.

- o **Observing History:** pop-up window showing the following tabs (Figure 9)
 - *PSF* the time dependence of the FWHM and ellipticity with the different colors representing the different filters and additional data from Image Health and DIMM seeing. The user may also select a specific filter by pressing the buttons located at the right of the plot. The plot allows the user to zoom a specific domain.
 - *Number Counts:* time evolution of detected objects (new in QR v1.1. - experimental)
 - *Background:* time evolution of the background counts and sky brightness.
 - *Footprint:* plots of RA and Dec of the exposures taken with different filters.
 - *Statistic:* provides a summary of all exposures taken in the selected period. For a given choice of start and end dates it provides information about all exposures of different types and filters obtained during the period and how many have been reduced.

These plots are automatically updated as long as the refresh is on (green cylinder).

- o **Reset:** it should be used to recover from unexpected errors, if that does not solve the problem please report to the Run Manager who can restart the portal.

- o **Clean Disk:** enables the deletion of all reduced exposures and catalogs not saved and of raw exposures in the local machine (quick1) according to user specified parameters that can be set under the **Environment** tab available by pressing the **Configuration** button. Process logs are never deleted. When the occupation of the disk reaches 90% the color changes to red and this command should be executed. This action launches a pop-up requiring confirmation.
- o **Save log:** exports the system log information.

Reduced Exposures

NIGHT	TYPE	FILTER
2012-09-23	all dome flat object	all E g

Refresh:

Show 25 entries

Total entries: 836

Search:

Exp ID	RA	Dec	Zd	MJD	T(s)	Type	Filter	Airmass	Object	Process	# CCDs	Date	Duration	Image
63847	00:55:46	+00:40:06	49.16	56193.340849	5.0	object	Y	1.53	SA92 standar...	10012546	6	2012-10-31 10:58:01	00:58	
63846	00:52:45	-26:34:57	10.58	56193.258681	30.0	object	r	1.02	Monet 1 astr...	10012545	6	2012-10-31 10:56:20	01:28	
63845	00:00:01	-00:00:04	33.64	56193.233894	10.0	object	r	1.20	Stripe82 Fie...	10012544	6	2012-10-31 10:54:38	01:00	
63844	00:00:00	-00:00:04	32.34	56193.224556	100.0	object	r	1.18	Stripe82 Fie...	10012543	6	2012-10-31 10:52:57	01:08	
63843	00:54:39	+00:56:50	45.52	56193.325262	3.0	object	g	1.43	SA92 standar...	10012542	6	2012-10-31 10:51:11	01:13	
63842	20:07:24	-44:37:02	17.49	56193.064523	3.0	object	Y	1.05	E8-A...	10012541	6	2012-10-31 10:49:29	01:15	
63841	00:52:45	-26:34:57	9.09	56193.253603	10.0	object	r	1.01	Monet 1 astr...	10012540	6	2012-10-31 10:47:47	01:13	
63839	00:00:01	-00:00:04	30.29	56193.19815	10.0	object	r	1.16	Stripe82 Fie...	10012539	6	2012-10-31 10:44:28	01:10	
63838	00:54:40	+00:40:09	31.27	56193.243504	3.0	object	r	1.17	SA92 standar...	10012538	6	2012-10-31 10:42:45	01:01	
63837	00:53:32	+00:40:08	48.15	56193.335502	3.0	object	g	1.50	SA92 standar...	10012537	6	2012-10-31 10:41:01	00:52	
63836	00:58:13	-37:40:30	24.84	56193.31052	3.0	object	g	1.10	NGC300 stand...	10012536	6	2012-10-31 10:39:17	00:46	
63835	00:52:45	-26:34:58	16.44	56193.277865	10.0	object	r	1.04	Monet 1 astr...	10012535	6	2012-10-31 10:37:31	01:14	
63833	21:02:37	-30:09:09	13.91	56193.02325	5.0	object	Y	1.03	focus sequen...	10012534	6	2012-10-31 10:35:05	01:04	
63832	18:43:13	+00:30:03	43.02	56193.059314	5.0	object	Y	1.37	SA110...	10012533	6	2012-10-31 10:32:32	02:17	
63831	21:41:41	+00:39:25	38.98	56193.164395	3.0	object	z	1.29	SA113 standa...	10012532	6	2012-10-31 10:30:56	01:00	
63830	00:58:13	-37:40:30	24.62	56193.309758	3.0	object	i	1.10	NGC300 stand...	10012531	6	2012-10-31 10:29:56	00:49	
63829	03:48:50	-00:58:42	30.96	56193.379429	45.0	object	i	1.17	GD50/HST...	10012530	6	2012-10-31 10:28:48	01:01	

Figure 8 - List of exposures reduced by QR.

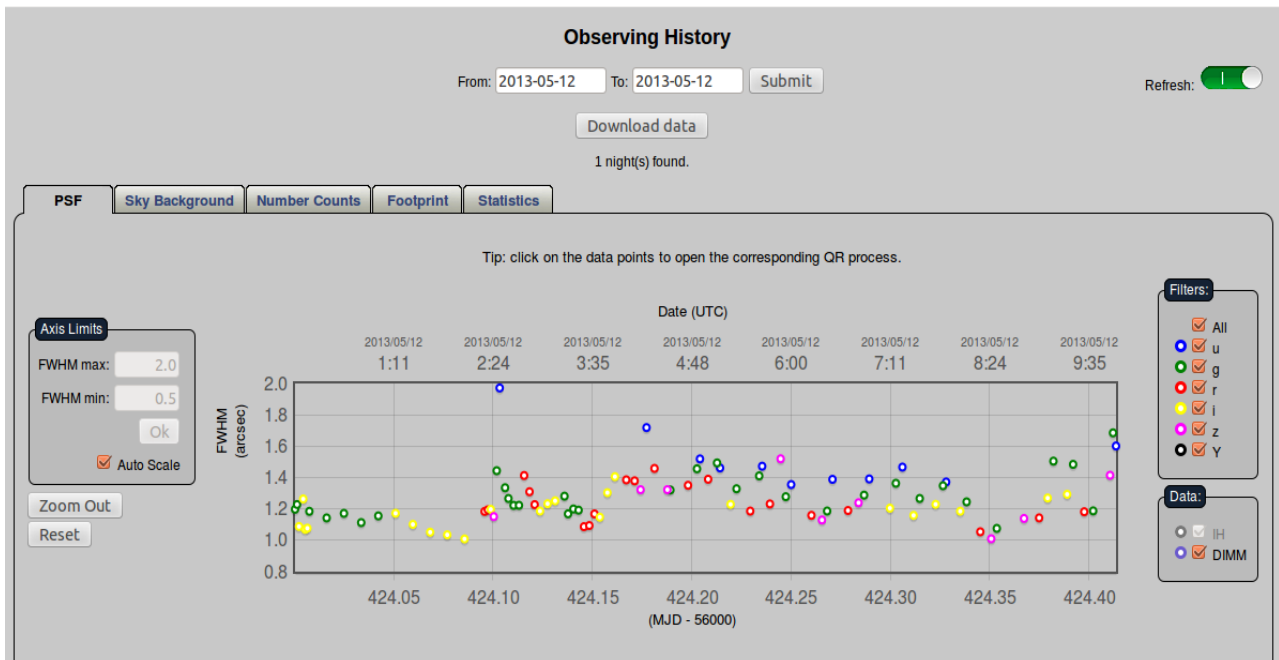


Figure 9 – Observing History: Evolution of the measured median parameters for the selected stars in all reduced CCDs.

- **External Info:** this group provides the observer with access to:
 - **Environmental Conditions:** the atmospheric conditions provided by Cerro-Tololo weather monitor.
 - **RASICAM:** also available at the run manager control, provides access to the infrared camera monitoring clouds.
 - **Trend Analysis:** Combine information of interest from community and survey nights (under development).

III. Product logs for FoV and CCD

The product log follows the design of those created for the Science Portal. At the highest level it consists of three tabs:

- **View process** – where basic information about the process is provided such as user, process number, duration of the process, expiration date among others.
- **Results** - where the results of the reduction are presented as well as the properties of the resulting image and the results of the quality assessment. This information is presented in several sub-tabs.
- **Comments** – provides the user with a blog where comments about the results can be made and later shared with collaborators for a peer-to-peer communication.

The product log of the FoV is very rich in content and it is beyond the scope of the present document to provide a full description. The user can make use of the help online available for each page (represented by a yellow question mark seen in the upper right of each page) (Figure 10)

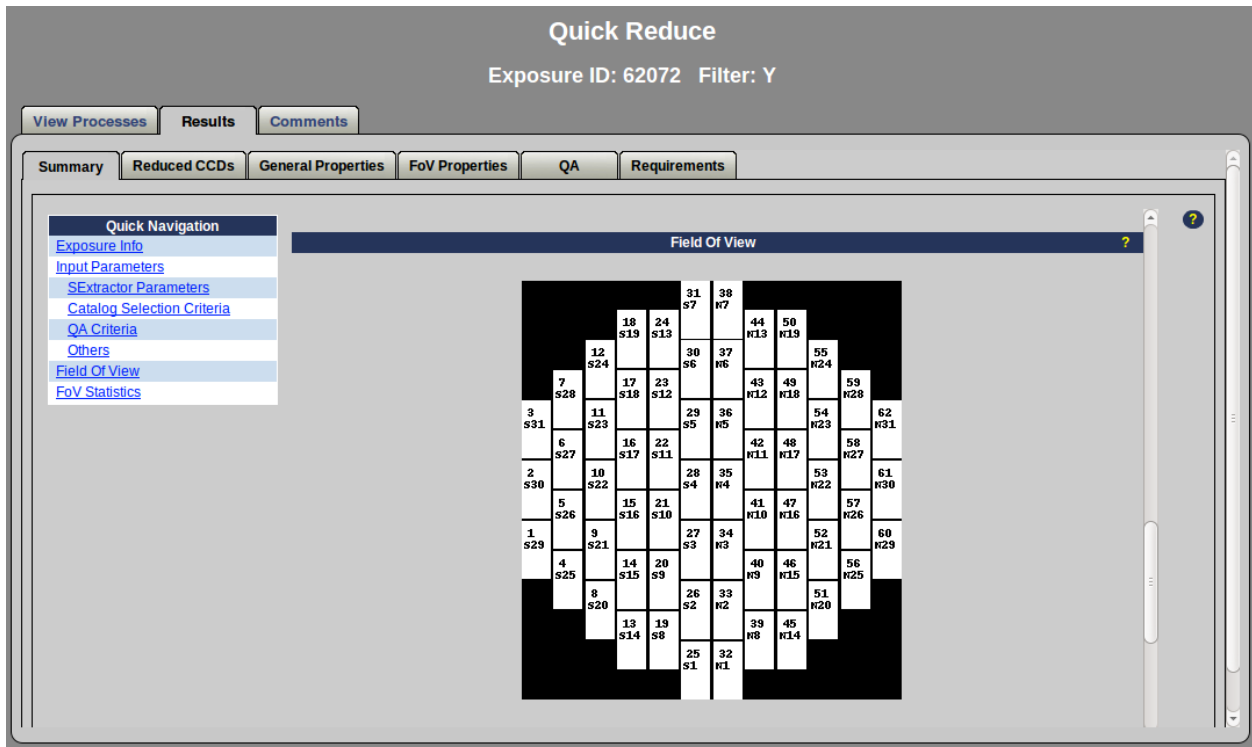


Figure 10. Representation of the FoV of DECam showing the number of each CCD. By pressing over the location of a given CCD one can access the log with the information of that specific CCD.

IV. Using QR during observations

While QR is a very flexible tool the following steps are suggested for beginners:

1. At the beginning of the run, double click in the “Quick Reduce icon” available on the Observer2 console
2. Press **Select Configuration**, press the **Select** button and make sure that the DES default configuration for the workflow is highlighted.
3. Press **Select CCDs** and check the CCD pattern. The pattern suggested is “Core” which selects 10 CCDs at the center of FoV. Typically, the reduction of this pattern takes less than 100 seconds.
4. Set QR in **Automatic** mode and press START
5. Follow the System log on the **QR Monitor** interface to confirm that new exposures are arriving, the progress and status of the reductions.
6. Press **Observing History** to monitor the progress of the observations.
7. At the end of the run press STOP

Some special cases to consider are:

1. If the user wants to monitor the behavior of a specific CCD this can be accomplished by going to the **Select CCDs**, highlighting the corresponding location and pressing **Save**. From then on this pattern will be used in the reduction of all subsequent exposures.
2. If the user wants to inspect an earlier exposure(s) the user should:
 - stop the automatic mode
 - enter the manual mode
 - press the **Start** button
 - mark the check boxes of the desired exposures
 - press **Submit**

NOTE: See also DES-doc #6705 ([Submitting manual reductions with QR](#)) for more details on this mode.

3. To return to the automatic mode the user should either wait until the end of the selected sequence of reductions or interrupt it and then return to the automatic mode.

V. Trouble shooting

The **RESET** button can be used to recover from unexpected errors. If that does not solve the problem the Run Manager should be communicated so that a full restart of the CTIO portal is carried out. After logging into quick1 (using the **quickreduce** account) type the following

- `ctio_portal_server.sh restart`

If the problem remains, please contact the QR team by sending an e-mail to helpdesk@linea.gov.br or contact the support team:

Skype Contact: angelofausti

Phone: +553136575176

VI. Future implementations

The **Observing History** pop-up is being remodeled to: 1) be more concise; 2) provide, in addition to the times series, a histogram of the quantities being considered over the selected time period; and 3) a table showing the corresponding median values, number of points and nights included in the calculation (a preliminar implementation is available under the Statistics tab)

Another improvement will be the inclusion of an interface to select the master bias and flats to be used in the reduction. The current version of QR uses a default set of calibration frames prepared with flats and bias from FIRSTCUT pipeline. For the time being, if another set of calibration is desired, please contact helpdesk@linea.gov.br

VII. Conclusion

This document is far from complete and should be viewed as an attempt to help first-time users of QR to familiarize with the tool. We expect QR to improve along the Survey. The feedback from observers is critical in making it a valuable tool for DES and, more generally, DECam users at large. There are different ways you can contribute to improve QR:

- o For reporting bugs please use helpdesk@linea.gov.br or the link under the **Help** menu
- o Comments about a particular reduction can be made using the comment field available in the product log
- o More general comments and requests can be made using the mailing list qr@linea.gov.br

Acknowledgments:

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