



January 13, 2012

Dr. Luiz Nicolaci da Costa
Observatorio Nacional
Rio de Janeiro, Brazil

Dear Luiz,

I am writing to support your efforts to continue to develop and deploy the Brazil Portal and tertiary archive site for the Dark Energy Survey (DES). This work is vitally important to the Dark Energy Survey project and to the ability of scientists both in Brazil and across the international DES collaboration to exploit these data for maximum scientific benefit. The DES-Brazil portal was independently reviewed in Philadelphia, Pennsylvania in October 2011 in conjunction with the semi-annual DES collaboration meeting. At that time, the reviewers were very favorably impressed with the progress your team had made in developing and refining the portal. A number of scientists within the DES collaboration have begun using the portal as a useful interface to the DES data. I believe it will serve the collaboration well in a number of aspects: as a means to compare and therefore test science analysis codes, as a science code repository, as a venue for accessing and analyzing value-added catalogs, and as an environment for carrying out tests of the DES data, among other aspects. In addition, the Quick Reduce software pipeline being developed by your group will be an important tool in DES mountaintop operations for rapidly assessing data quality and checking that the survey is progressing smoothly in real time. Finally, the tertiary archive will efficiently serve data to all scientists in the DES-Brazil consortium.

The DES project is now entering a critical, exciting period: installation of the instrument on the Blanco 4-meter telescope at CTIO in Chile will begin this February, with first light expected in the middle of the year and the start of DES survey operations in Sept/Oct. of 2012. The Survey will carry on for 5 years, into Feb. 2017, and it will be important to have continued support of the Brazil portal, Quick Reduce, and the tertiary archive through that entire period. For the longer term, we are exploring the Dark Energy Spectrograph (DESpec) project, which would enable spectroscopic follow-up of ~10 million DES galaxies to significantly enhance the science reach of the project. As that develops, I look forward to continued participation by the DES-Brazil team.

Yours Sincerely,

A handwritten signature in black ink that reads "Joshua Frieman". The signature is written in a cursive style with a long horizontal flourish at the end.

Joshua A. Frieman
Director of the Dark Energy Survey
Fermilab Center for Particle Astrophysics

Professor of Astronomy & Astrophysics
Kavli Institute for Cosmological Physics
The University of Chicago

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Dear Luiz

We want to thank you for taking on the task of organizing the independent validation of the test, preliminary and annual releases of data to the Dark Energy Survey Collaboration.

As you know, the preliminary and annual releases are the culmination of tens of thousands of man-hours of work at the Cerro Tololo Inter American Observatory, the National Center for Supercomputing Applications, and a distributed software development effort which includes tens of scientists in the collaboration. These data releases are consumed by approximately 300 scientists in Europe, North, and South America.

The independent check of the data you are providing is crucial for making progress in maturing the software and production processes. This is because as we work with DECam data to understand the details of calibrating and correcting the data, the software is in flux, and benefits from continuous scrutiny.

The quick feedback your group is able provide using the portal framework at Linea is extremely valuable to assess the progress in producing data. When taken together – your professional facility; your work to provide for smooth data flow from NCSA to Brazil; and your web-based framework form capabilities which have taken years to develop, are unique to the collaboration, and are of immense help to the collaboration.

We look forward to working with your group throughout the lifetime of the survey data processing effort. There is great promise of 7 years of additional collaboration.

Best,

A handwritten signature in cursive script that reads "Donald Petravick".

Donald Petravick
Principal Investigator, Dark Energy Data Management

Rob Pennington
Deputy Director for Data and Information

La Serena,
November 3, 2013

To: Dr Luiz da Costa.

Dear Dr. da Costa,

The Quick Reduce (QR) tool provided by LineA and available via the DES-CTIO Portal is a very useful tool in enabling observers to quickly evaluate their data and record trends throughout the night, and CTIO is very much in favor of having it available for community observers to use. We consider the tool to be very capable and mature, and do not at this time have any suggestions for enhancing its abilities. Any future community suggestions for improvements will be communicated to LineA by CTIO, and implementation will only take place with the agreement of LineA, DES, and CTIO. Communication of bugs and problems shall be via the LineA help desk. LineA support shall be best effort, and is not expected to be real-time. CTIO staff shall have basic training in the operation of QR, such as stopping, starting, monitoring disks, and basic trouble-shooting.

We would like to thank LineA for providing such a capable tool.

Kind regards,



Dr. Nicole S. van der Blik
Director (Interim)
CTIO / NOAO-South



National Optical Astronomy Observatory

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16 April 2013

Dr. Luiz Nicolaci de Costa
Director
LINEA

Dear Dr. de Costa

I'm writing this letter to relay our appreciation for the Quick Reduce system you and your team delivered with the Dark Energy Camera (DECam), and the excellent level of support you've provided since its delivery. I have spoken with the Science Data Management group at NOAO, and there is interest in exploring the possibility of using the system more broadly at NOAO for community users of DECam.

With its 570 million pixel focal plane, the DECam is an extremely complex and challenging instrument to use and support. At the Cerro Tololo Inter-American Observatory, we must provide support for not only the users who form part of the Dark Energy Survey (of which your group forms an important part), but also support users who will be using the instrument for the first time without extensive preparation. The massive quantities of data (often half of terabyte per night!) can easily overwhelm even the most prepared astronomers, making it quite difficult to analyze the data quality as the data are taken. For many of our users, decisions must be made in real time based on the data quality.

The Quick Reduce (QR) system has quite impressively filled this need. It has provided a fast yet flexible tool for our users to get immediate feedback about the quality of the data they are obtaining throughout the night. With its default feedback of image size and ellipticity, an astronomer can quickly determine if there are problems with the telescope or camera that are affecting the data, or if the sky conditions are impacting the image quality. Beyond these quick results, the histograms and other statistical analysis tools based on detected stars and galaxies provide the user with critical information that can be used to modify and optimize observing strategies in real time.

The feedback we've received from our users, both those within the Dark Energy Survey collaboration and the visiting astronomers who have used the system, has been quite positive. Our users have been impressed not only with the excellent feedback, but also the reliability of the system. And we have only just begun to explore and take advantage of the flexibility that your team has built into the system.

Given this experience, we are interested in possibly making even further use of this system, not only at the telescope but also in conjunction with our archive systems as we expand our

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user base and improve the data products we can deliver. We hope to build on our current strong collaboration to gain experience with the system and work with you to improve and expand its abilities.

Sincerely,

R. Chris Smith
Director, AURA Observatory in Chile
Former Director, Cerro Tololo Inter-American Observatory

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To whom it may concern:

January 17 2013

I would like to certify that the *Quick Reduce* tool produced by the Brazilian Consortium of the Dark Energy Survey (DES) Collaboration, under the leadership of Dr. Luiz da Costa, is a mature product of great value in ensuring high quality scientific data from the Dark Energy Camera (DECam). *Quick Reduce*, as its name implies, calculates parameters for a selectable subset of the CCD images from DECam shortly after the data are taken. These can be used to make adjustments to the observing protocols in near real-time, and also provide a detailed record of the instrument performance over the course of a whole night, or a longer period. It was originally expected that the tool would be rather "light weight", but this is not the case, *Quick Reduce* is extremely capable, and is "light" only in the sense it is really fast and efficient, not in its capability. It is easy to use, and can be configured to requirements. Further work is planned to add new, useful features. Apart from its use for the DES itself, *Quick Reduce* would be of great value for other users of DECam and I hope this extension of its use will be possible. I strongly endorse its value, and hope work can continue to refine it to make it of even greater utility.



Alistair R. Walker

NOAO DECam Instrument Scientist,
Astronomer, NOAO
<http://www.ctio.noao.edu/~walker/>.