

REPORT OF THE 7th GTC USERS COMMITTEE MEETING
HELD AT GRANTECAN
LA LAGUNA, 29-30 JANUARY 2013

1. Recent progress related to past reports

The GUC was informed of the developments carried out to the telescope and its associated instrumentation. The GUC is very well satisfied on the positive general advancement in several of the basic issues identified in previous reports.

A full report on these actions has been produced by GRANTECAN and it is attached to the GUC report.

2. Feedback from the user communities

The GUC has received feedback from users in Spain and Mexico that can be summarized as follows:

- Users are very happy with the efficiency and performance of the long slit mode of OSIRIS. GRANTECAN and the OSIRIS team have been congratulated for this high success.
- Users urge to prioritize the MOS observations. It is expected to be offered by 2014A. MOS commissioning has already been started at GTC and it is in good shape. The results of the MOS commissioning will be made publically available through the GTC web. If everything works as expected, the MOS mode can be offered in semester 2014A.
- Pipelines for reduction of OSIRIS data are again requested by the Community. This is particularly important for the TF reduction. The OSIRIS team has already delivered a preliminary version for testing by the OSIRIS Community. Two OSIRIS Pipeline Workshops have been held to train users with the current pipeline: on January 16th in UNAM (México), and on January 21st in the Universidad Complutense de Madrid. Also on January 17th there was a round table discussion "Science and productivity with OSIRIS", with several participants and an open discussion with the people attending to the workshop.
- The OSIRIS team has collected a survey from the users. A new version with the functionality specified in the OSIRIS blog is expected during first semester of 2013. The GUC is very satisfied that the OSIRIS team took into account most of the suggestions made during the GUC meeting in July 2012. According to GUC expectations, the only functionality still pending is a

more automated version.

- Users also requested for an update of the instrument OSIRIS: change of the CCD detector and upgrade to resolution 5000. The OSIRIS team plans in the near future a change of the detector, but no plans have been made yet to improve the resolution in the near future.

CANARICAM

- CANARICAM users asked for maintaining a flexible scheduling of the instrument. This is needed to increase the chances of getting the right weather conditions required for the observations of CANARICAM programs. GRANTECAN gave a full report on the semester and mainly programs with relaxed Precipitable Water Vapour (PWV) conditions have progressed. Full information on the PWV statistic can be obtained in the IAC WEB pages <http://www.iac.es/proyecto/site-testing/>. The PWV median value obtained during the last year is 7 mm. Since the primary mirror needs to be phased before the observations with CANARICAM, GRANTECAN is doing its best to have CANARICAM ready most of the time. However according to the GTC operations manager, the primary mirror co-phasing is currently a time-consuming, non-routine procedure that can take up to 2.5 nights (ideally could be reduced to some 0.5 nights on average) and that should be repeated every 15 days. The GUC acknowledges GRANTECAN for such huge effort.
- Users requested that for CANARICAM the same readout mode be used as that for T-ReCs. The current readout mode that was initially preferred by the CanariCam science team introduces horizontal noise bands. GRANTECAN is studying the impact of this change. Users also requested the implementation of the burst mode readout. This mode is currently being studied by GRANTECAN to be implemented in a best effort basis.
- Users recurrently wonders about when all Polarimetric modes will be available. GRANTECAN offered imaging Polarimetry in 2013A. The spectropolarimetry mode is currently under commissioning and it is expected to be offered as soon as it is completed.

Phase 2

- Users demand a more detailed description of the policies related to the execution of observing blocks, in particular these related to the duration of OBs. Long observing blocks are more difficult to schedule and more sensitive to unstable observing conditions (both atmospheric and technical). The observatory only guarantees the required observing conditions for

observing blocks up to one hour and therefore recommends using this duration as the maximum total length of any observing blocks. Also, a more sensible overhead scheme would be desirable. In some cases the overheads are perceived as excessive.

- Users wonder whether it will be possible to re-use the OBs from previous semesters. According to GRANTECAN, the re-use is possible reactivating complete programs (if agreed by the time-allocation committee) but not for the individual OBs.

GTC Operation:

- ESO/GTC reserved targets. GRANTECAN pointed out that this matter needs to be asked to ESO since it is ESO's responsibility. The reserved targets for each program can be found in the ESO pages, but GRANTECAN does not enforce this list of reserved targets by other users
- ESO/GTC programs are far from being completed, 52% completion up to now. GRANTECAN present the details on the different program completion levels. No priorities have been established by the ESO Liaison Committee to the ESO/GTC programs. The GUC consider that this might not be fair for those programs with a small observed fraction.

GTC New Instrumentation:

- Users urge about the need of Near Infrared instrumentation at GTC. The CIRCE instrument new deadline is 2014A. EMIR is in a good shape with expected operation at the telescope in 2015.
- The second generation instrument MEGARA has passed the PDR and delta-PDR and it is ready for final development. MIRADAS has celebrated the PDR last autumn and it is pending to full fill requirements suggested by the reviewers.
- Visitors Instruments are welcome by GRANTECAN within the restriction imposed by the lack of human resources. They will be studied in a case by case basis.
- GRANTECAN informed that they plan to make a revision of the current instrumentation plan for GTC during the next 6 months. An international Committee will produce this revision. Therefore GRANTECAN compromises with the new instruments have to wait until this revision is finish.

3. Summary of the GUC recommendations

1. Ready the remaining OSIRIS modes, in particular the MOS mode should be given a high priority due to its high demand from the community.
2. Making available possible data reduction pipelines. This is especially relevant for the OSIRIS TF and MOS modes.
3. Getting new CANARICAM modes, spectropolarimetry and fast guiding, ready with updated information about the latest commissioning results.
4. Maintain flexible scheduling for CANARICAM to allow observations of the high demanding, in terms of weather conditions, CANARICAM programs.
5. Ready the dome to enable observations at all sky positions. This will be especially relevant for extrasolar planets research.
6. Updating regularly the web pages (with news on instrument commissioning and selection, for example). Some mechanism should be put in place to allow doing this easily and enabling administrative personnel to do it.
7. Better defined tools to make it easier for the user to follow up the status of a granted observational program.
8. GUC has distributed a questionnaire to the GTC community, linked to GUC's blog, with the spirit to produce a proper evaluation of the level of satisfaction of users with the observation delivered by GTC. GUC consider that the questionnaire needs to stay operative for next semesters to collect information from the users.
9. GUC is worried about the situation of the Near Infrared Instrumentation CIRCE and EMIR, for which current plans envisage first light not earlier than late 2014.
10. Providing information to the Community on the results of the Revision of the Instrumentation Plan for GTC. The previous instrumentation plan from 2008 is accessible in the GTC web pages. GUC remarked to GRANTECAN the importance of keeping NIR and AO observations to get top science from GTC.
11. The overall scientific efficiency has been improved from past semesters. The GUC endorses the continuous drive by GRANTECAN to improving it.
12. GUC endorses the different TACs and GRANTECAN efforts to keep track of the targets observed to avoid duplication of the observing targets.

13.To implement the DDT program for the coming semesters, once ESO/GTC programs have been finished. This information should appear more clearly stated in the GTC web.

GUC Members

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Almudena Alonso	Instituto de Física de Cantabria
Begoña García	Instituto de Astrofísica de Canarias(last meeting)
Enric Pallé	Instituto de Astrofísica de Canarias
Miriam Peña	Instituto de Astronomía, UNAM, México (absent)
Nanda Rea	Instituto de Ciencias del Espacio,CSIC
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GTC STATUS REPORT
to the
7th GTC USERS COMMITTEE MEETING
IAC, La Laguna, 29-30 JANUARY 2013

1. Introduction

This is a summary report to keep the GTC Users Committee (GUC) informed on the GRANTECAN activities around the GTC. These activities are organised and presented here with the priority order at GRANTECAN: 1) science operations are the top ranked activity to maximise the science data production and quality; 2) technical operations to increase the robustness of the facility, to increase the capabilities of the current set of instruments and to develop tools to facilitate the telescope operation and data management; and 3) the development of telescope upgrades and new science instruments.

2. Science operations

Along the past year, from September 2011 to August 2012 (semesters 2011B and 2012A), a total of 243 nights (66.6% of the full year) were devoted to science programs (ESO/GTC science time included), a total of 14 nights (3.8%) were devoted to the ESO/GTC technical time program, and the remaining 108 nights (29.6%) were used for technical activities, including commissioning of some OSIRIS and CanariCam observing modes.

The science time was used by observing programmes in queue-scheduled observing mode on 227 nights (93.4% of the total science time) and in visiting-scheduled observing on 16 night (6.6%).

On average, during the time consumed for scientific observations in queue-scheduled observing mode, an 8.0% of time was lost due to technical faults and a 28.0% of time due to poor weather. A total of 818.9 hours of telescope time were delivered to the PIs in the form of 842 observing blocks. The overheads of this queue-scheduled observing mode (common calibrations, discarded observations, empty queues, human factors, manual procedures, etc.) consumed 429.0 hours (34.4% of real time available once corrected for weather and technical losses).

The science time was consumed by CAT programs (82.1% of the total science time), ESO/GTC science programs (15.7%), CCI International Time Programs (0.8%) and CanariCam Guaranteed Time (1.4%).

Along that year, 89 CAT observing proposals were attended and got GTC data. Up to 50 (56.2%) of them were completed.

Observing programmes are ordered in the queues and executed following the

priorities fixed by the TACs. The Spanish TAC now publishes program ranking in terms of quartile blocks to facilitate a better understanding of the relative priority of each observing program.

Some 49 publication in refereed journals have been published since the beginning of GTC operations in March 2009.

For the coming semester, 2013B, it is expected to devote 80% of the time to science programmes and to offer the broad-band imaging, including the SHARD filters, RTF, BTF (between 450 to 650nm), long-slit spectroscopy, Frame transfer and Fast Photometry modes of OSIRIS, and low resolution spectroscopy, imaging (not at the diffraction limited resolution) and imaging polarimetry with CANARICAM. Non sidereal tracking will also be available.

The possibility of giving continuity to some observing programs from one semester to another is now in the hands of the TACs.

3. Technical operations

Technical work is focused with maximum priority to the following items: a) to improve the robustness of the system with the aim to reduce the average fault rate; b) to increase the utilities and tools available for night operations and quality control to reduce the observing overheads and increasing the volume and quality of delivered data; and c) to complete the remaining observing modes of OSIRIS and CanariCam.

A major shut down on the telescope was required in past October-November due to a malfunction of some hexapods parts in the M2 driving system. It was required to dismount the full unit and to diagnose and solve the failure in the GTC lab. Four weeks were required to solve the problem and to recover the telescope to an operational status. That telescope shut down period was used to do other actions were a new aluminization of M3 is one of the major improvements.

A failure of the wave front sensor (SFS) at the nasmyth B platform required dismounting OSIRIS to get full access to this unit at the A&G box. Some micro-switches were repaired and it was an opportunity to clean the A&G optics and complete some preventive maintenance.

Due to these major incidences the rate of segment changes was decreased along the past semester. The full M1 reflectivity has decreased a bit (from 84% to 82%) but the global telescope reflectivity is currently (64%) above the threshold limit (62%) due the new aluminization of M3.

The dome vignetting issue (the unvignetted telescope elevation limit is 72 degrees) will remain for some years as its solution will require important resources and time. Current estimation shows that it will be fixed by 2015.

Work on improving the optical quality of the telescope has continued. The rate of changing segments will be increased once other technical activities with higher priority (for instance preparing the telescope for commissioning of CanariCam)

have relaxed pressure on telescope time and human resources. A long-term programme is running to understand the changes of the optics quality of the telescope with the environment and to propose changes and improvements.

Other programs are running and improvements are expected shortly: the non-sidereal tracking capability, the fast-guiding functionality, some modifications to the Monitor Manager that is currently the major source of troubles during observing time, fixing problems with the FITS headers, fixing problems with the OSIRIS calibration system (ICM), etc.

Some actions are being initiated to face with the obsolescence of some GTC control system elements. The current related software and control technology is being study to identify a new GTC Control System development path.

3.1 OSIRIS

The blue TF mode of OSIRIS has been commissioned and will be available between 450 and 650nm. The shorter wavelength range will be commissioned once the required blocking filters arrive. They are expected by late 2013.

The fast-photometry mode has been also commissioned and will be offered in semester 2013B.

A large progress has been done with the OSIRIS MOS mode. This mode is currently under commissioning and it is expected to be offered for semester 2014A if no major difficulties arise.

The OSIRIS pipeline is currently being tested by the OSIRIS extended team. GRANTECAN has requested the GUC to participate in this pipeline evaluation and to assess its readiness to be accepted and distributed to the users.

3.2 CANARICAM

CanariCam is under regular operation since March (semester 2012A). Imaging in the N and Q bands and low-resolution spectroscopy in the N and Q band are currently offered. From next March (semester 2013A) also imaging polarimetry will be available.

CanariCam is available for observing at any time since past September and only limited by the availability of well-trained personnel on the use of CanariCam and in the procedures for M1 phasing. The training activities are progressing in parallel with the regular observations. Phasing M1 for a full availability of CanariCam is required twice every month. That process is currently a time consuming task that unavoidable increases the observatory observing overheads.

The remaining modes (spectro-polarimetry, coronagraphy and high-resolution spectroscopy) are still under commissioning. Spectropolarimetry is the mode currently under commissioning. Progress is limited by manpower availability at UF and GRANTECAN.

The major difficulty along this semesters using CanariCam are the high values of PWV during the past year. Users are invited to take this into account when setting the PWV limit in their observing proposals.

The performance of CanariCam is also somewhat hampered because the fast-guiding functionality of the telescope is not yet ready. Its development has progressed as planned and it is currently under test at the telescope. A failure at the Nasmyth-A A&G Box has prevented to progress testing this telescope functionality. Dismount CanariCam is required to gain access to the A&G Box.

The regular use of CanariCam has shown the need to service it every six months to change the cool head that has a life time much more shorter that specified by the supplier. This frequent service has an unexpected impact on the availability of CanariCam and the operation work load.

4. New instruments

4.1 EMIR

EMIR is currently undergoing integration at the IAC labs. Nearly all the elements have been fabricated and have been delivered to the IAC. The vacuum chamber has successfully passed the vacuum tests and it is being populated with the optical bench and optical dummies to proceed with the first cooling cycle.

A critical element that is integrated and tested at the factory is the Configurable Slit Unit or CSU. Its acceptance test and delivery has been delayed and is scheduled to be completed along the first half of 2013.

According to the current schedule, EMIR will be commissioned at the GTC during the second half of 2014. It is expected to be offered to general use no earlier than semester 2015B.

EMIR will be installed at the Nasmyth A focal station, were CanariCam is currently located. At that time CanariCam will be moved to a Folded-Cass focal station (currently under development) and re-commissioned there.

4.2 CIRCE

CIRCE is a visitor instrument from the University of Florida (UdF). It is currently under integration and test at the UdF labs. The UdF plans to complete it by the first months of this year. The CIRCE detector is in the process to be delivered to the UF, but with delays. CIRCE could be installed at a Folded-Cass focal station and commissioned near the end of 2013.

4.2 FRIDA and Adaptive Optics

FRIDA held its Critical Design Review (CDR) past September 2011. Some open issues remain from that CDR that are pending to be closed along the following months.

The FRIDA schedule shows that it will be completed for lab acceptance along 2015. Later it will be received at the Observatory, mounted and commissioned, something that, due to the complexity of this instrument and the AO system that feeds it, will extend well into 2016.

The AO System, under development by GRANTECAN, is preparing an operational system in the lab by the year 2014. It has to be installed and tested at the GTC Nasmyth B focal station prior to the installation of FRIDA.

At that time, OSIRIS that is currently operating at the Nasmyth B Focal station will be moved to the Main Cassegrain Focal station for continuing its operation.

4.3 MEGARA and MIRADAS

Both represent the new generation of GTC instruments. MEGARA has completed the Preliminary Design phase and passed successfully its review, including a complementary review (delta-PDR) past September 2012. The GTC Steering Committee (CSUG) has approved to proceed towards the completion of this new instrument. The final development of MEGARA and its schedule is now conditioned by the availability of resources.

MIRADAS has celebrated its PDR past November and is currently completing the points of discussion opened. This phase will be completed along the first months of 2013. A final decision on this future instrument will be conditioned by a revised instrumentation plan and the available resources.

GRANTECAN has initiated a review of the GTC Instrumentation Plan based on the recommendations made by an external peer committee in 2008. An updated Plan has to configure the current and future development of the GTC instrumentation well in accordance with the available and expected resources.

4.3 HORUS

HORUS is a single source high resolution (50000) visible spectrograph proposed by the IAC as a visitor instrument and based on the old UES spectrograph used at the WHT. This proposal is currently under study.

4.4 Telescope upgrades

The main telescope upgrades ahead are the preparation of the new focal stations required for the new set of instruments: The two Folded-Cass and the Main-Cass focal stations. The first one is currently under development but the second one is waiting for resources.