

# Report on the 9<sup>th</sup> GTC Users Committee Meeting

Held in La Laguna, Tenerife, at the IAC headquarters.  
Jan 27th and 28th, 2014

## 1 Context and general remarks

The GTC users committee (GUC; members listed at the end) was informed of the work carried out to operate, maintain and develop the telescope and its instrumentation. *The GUC is satisfied with the positive general advances during the last semester, including several of the basic issues identified in previous reports.* In particular, OSIRIS MOS is operative and has been offered to the community, and actions tending to have a fully operational dome have already begun. A full report on the actions has been produced directly by GTC and it is attached to the GUC report.

The GUC is also satisfied with the advances in the new GTC instruments and in particular the resident instruments EMIR, MEGARA and FRIDA.

The GUC congratulates GTC for the positive evolution of the number of paper based on GTC data, which discards some original concerns.

In addition to these positive views, the GUC is very much concerned with the impact that the present funding shortages may have on the operation of GTC and on the new instrumentation to come up.

## 2 Input from the community

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

- The Mexican community is very much affected by the fact that it systematically obtains less observing time than its 3.75% share of GTC.
- The way GTC handles observing Target of Opportunity (ToO) programs does not guarantee that triggered ToOs are observed. This represents a significant disadvantage compared to other major facilities that compete with GTC for this observational niche.
- Apparently, GTC observing time is on sale as announced to the French astronomical community. We would like a clarification from GTC on this issue and, if true, users should know the conditions under which the time will be sold.
- Time allocation committee (CAT) criteria are not maintained over time, the allocated time is insufficient to complete the requested programs, and the feedback to the PIs are not as clear as it should be.

- Worries have been expressed as to CanariCam being decommissioned before the Spanish astronomical community reaches the appropriate know-how to use this unique instrument.

### 3 Recommendations

1. GUC appreciates and endorses the GTC's initiative to prioritize Mexican projects in the remaining period of the 2013B semester, so as to fulfill the agreed Mexican share of GTC. Mexican community has been suffering from the failure to deliver the agreed upon share in the GTC time in the past semesters. GUC feels that it is important to fulfill this agreement. At the same time, GUC encourages the Mexican CAT to balance the approved observing proposals according to the expected observing conditions at GTC.
2. We appreciate GTC efforts to revise the original instrumentation plans according to the present situation. However, we find the new instrumentation plan too vague to be reliable. We encourage GTC to complete the current plan including available resources, studying risks, and providing alternatives in case the planned instrumentation fails to reach GTC in due time.
3. As part of the instrumentation plan, GTC has stop developing the GTC Adaptive Optics system. IAC has offered taking up the responsibility, but funding is not available yet. The implications of this decision on instruments like FRIDA are unclear, and should be addressed when revising the plan.
4. CanariCam will be a very competitive instrument until the advent of MIRI the mid IR instrument onboard the James Webb Space Telescope (circa 2019). (Even more competitive if the fast guiding mode is implemented, which GUC recommends to be done as soon as possible.) Therefore, decommissioning CanariCam after EMIR arrival at GTC is contemplated as a bad solution. The GUC recommends GTC to study scenarios that keep CanariCam active until JWST launch. In any case, the solution or decision regarding CanariCam should be clearly stated and detailed in the instrumentation plan.
5. GUC understands that the instrumentation plan should detail plans for the commissioning of the different focal stations. This should include not only the foreseen schedule for the commissioning, but also the specific characteristics and supplies that each station will have within that schedule. This is crucial not only for the development and usage of the instruments that are currently foreseen, but also for possible visitor instruments.
6. GUC urges GTC and the MEGARA team to sort out their discrepancies and begin the construction phase of this long sought instrument as soon

as possible. We encourage finding imaginative solutions, trying to avoid a drastic cut off of guaranteed time – an obvious discouragement for the highly motivated MEGARA team.

7. Due to the present budgetary and legal restrictions to hire new personnel, the operation and upgrading of GTC are currently relying on a highly committed and enthusiastic staff which, however, is undersized as compared to the original plans and to teams running other similarly large instruments. This shortage of manpower necessarily creates considerable stress on the GTC staff. This is worsen by the ambiguity in the future plans of the observatory, which is altogether leading to restlessness in some of the workers. As users, we are worried that such a continuous strain may ultimately affect the operation of the telescope. Therefore, we encourage the directorate of GTC to be extremely watchful at the needs and difficulties of the staff, and to keep working on finding resources to level off the GTC team size.
8. The IAC's Director has Director Discretionary Time (DDT) on GTC, but it has not been used so far waiting for completion of the time-demanding ESO/GTC programs. Fortunately, they are close to completion and so we urge the IAC's Director to implement DDT observations as soon as possible. As in many other observatories, the DDT should be used for singular ToO (e.g., the recent M82 SN), short proof-of-concept observations, or risky projects which will never make it through a traditional CAT (e.g., the HDF). We expect DDT to provide additional visibility to GTC. The existence of this observing time and the rules for application must be properly publicized.
9. The GUC suggests to revise the way in which Target of Opportunity (ToO) programs are executed, in order to increase their efficiency, and to make GTC competitive in line with the policy of other major observatories. We understand that this will require coordination with the CAT that should also accept these policies. For this reason we are sending a letter with suggestions to the CAT that may help to implement new observing procedures minimizing the interference of ToOs with regular queue observations.
10. OSIRIS multi-object (MOS) configuration was offered last semester for the first time, and it has attracted considerable attention from the community as proven by an oversubscription well above the average. However, it will not reach its real potentials until the MOS reduction pipeline is fully operational. We were informed that the pipeline is almost ready, so, we urge GTC and the OSIRIS team to finish it up as soon as possible, and to make it publicly available.
11. We have been informed that the upgrade of the OSIRIS CCD has been postponed by the IAC. We recommend to resume the project, finding funds and support not only from the IAC but also from the full Spanish community possibly through the RIA (*red de infraestructuras astronómicas*).

Replacing the old CCD represents a modest investment that will benefit the large community of OSIRIS users.

12. GTC observing time is on sale. We encourage GTC to make the conditions publicly available (e.g., available time, weather conditions, fares, eligible researchers, time-scale of the commitment, etc.). We also urge CTG to foresee potential conflicts of interest arising when a paying team requests targets and/or projects already approved by CAT.
13. The new readout mode of CanariCam reduces the noise but increases the overheads. Implement the new real overheads for CanariCam, but do it for proposals accepted from the next semester on (2014B), once the exposure time calculator has been modified accordingly.
14. We suggest to add a search box to the webpage of GTC. It will speed up finding specific contents.
15. GUC welcomes GTC plans to solve the problems with the shutters of the dome, and urges to complete them on schedule (summer 2015).
16. The success of GTC is intimately intertwined with decisions taken by the CAT. Moreover, several inputs from the community refer to CAT resolutions (Sect. 2). Therefore, even though CAT is not the main addressee of this report, we feel compelled to make several general recommendations that CAT may want to follow: (1) provide time to finish highly ranked proposals not completed in previous semesters, (2) assign the time as requested in the proposal, even though this action necessarily cuts out the number of accepted proposals, (3) minimize changes in the scientific criteria in between semesters, (4) be more precise in the feedback given to the authors, (5) balance the time allocated by the different panels according to the requested time, and (6) work out how to grant that Q1 ToOs are observed when triggered (see item #9).

## GUC Members

Almudena Alonso Herrero	Instituto de Física de Cantabria
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Nanda Rea	Instituto de Ciencias del Espacio, CSIC (last turn, absent)
Jorge Sánchez Almeida	Instituto de Astrofísica de Canarias, Chair
Miguel Sánchez Portal	European Space Astronomy Centre/ESA

**GTC STATUS REPORT**  
**to the**  
**8<sup>th</sup> GTC USERS COMMITTEE MEETING**  
La Laguna, 27-28 JANUARY 2014

## **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 2012 to August 2013 (semesters 2012B and 2013A), a total of 288 nights (78.9% of the full year) were devoted to science programs (ESO/GTC science time included), a total of 4 nights (1.1%) were devoted to the ESO/GTC technical time program, and the remaining 73 nights (20.0%) 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 264.3 nights (91.8% of the total science time) and in visiting-scheduled observing on 23.7 night (8.2%).

On average, during the time consumed for scientific observations in queue-scheduled observing mode, a 12.1% of time was lost due to technical faults and a 22.8% of time due to poor weather. A total of 1,142.7 hours of telescope time were delivered to the PIs in the form of 1459 observing blocks. The overheads of this queue-scheduled observing mode (common calibrations, discarded observations, empty queues, human factors, manual procedures, etc.) consumed 395.3 hours (26.0% of real time available once corrected for weather and technical losses).

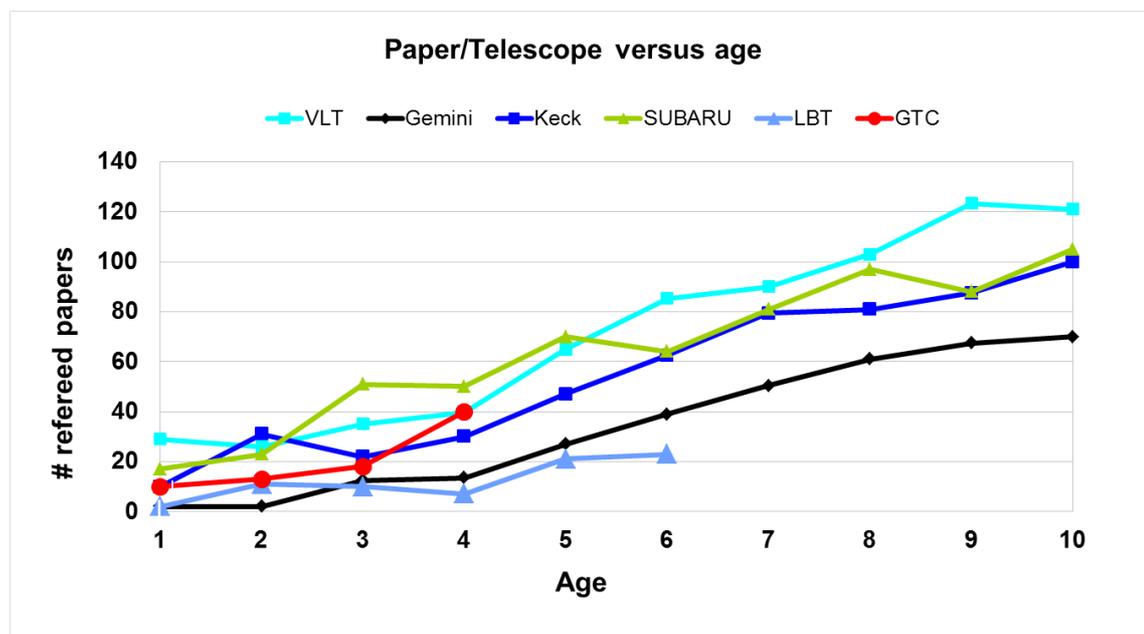
The science time was consumed by TACs programs (66.2% of the total science time), ESO/GTC science programs (25.4%), CCI International Time Programs (1.4%) and OSIRIS and CanariCam Guaranteed Time (7.0%).

Along that year, 109 TACs observing proposals were attended and got GTC data. Up to 45 (41.3%) 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 81 publication in refereed journals have been published since the beginning of GTC operations in March 2009 up to end of 2013.



For the coming semester, 2014A, 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, MOS, Frame transfer and Fast Photometry modes of OSIRIS, and low resolution spectroscopy, imaging and imaging polarimetry with CANARICAM.

The possibility of giving continuity to some observing programs from one semester to another is 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 and to correct the dome vignetting issue.

The nasmyth-B A&G box suffered a breakage of a cooling pipe during August 2013. The correction of this failure took a lot of work up to the end of September 2013. During that period of time the observations with OSIRIS were stopped and all the observing time was devoted to programs using CanariCam. The same corrective work was done on the nasmyth-A A&G box to avoid a simillar failure

in a future. Observations with CanariCam were paused then and all the observing effort was dedicated on OSIRIS programs meanwhile the other A&G Box was being serviced. That give us the opportunity to replace the cooling head of CanariCam that was showing degraded performances. These periods of instrument shutdowns did not affect the statistics of technical observing failures as an alternative instrument was available all the time. The loses of observing time due to technical failures was at a level of 7.8% in the semester 2013A.

A new release of the GTC Control System (GCS) has improved the robustness of some parts of it. After an intensive test campaign it is under regular use. An improvement of the observing efficiency is expected after this release.

An in deep study of improvements for the dome shutters was contracted to IDOM. This study will be completed by March 2014 but the preliminary results are very attractive and our expectations to achieve a final solution for this system by the summer of 2015 are now more solids.

An in deep study of the GTC instrumentation plan was addressed with the help of an external review team. This team was chaired by Dr. Guy Monnet and the other members were Prof. Phil Charles, Prof. Artemio Herrero and Dr. Jesús González. Later, the GTC Steering Committee (CSUG) approved a new GTC Instrumentation Program that keeps all the approved instruments but accommodated them to a more realistic schedule. Also the required budget to address this plan was studied and approved.

### **3.1 OSIRIS**

The blue TF mode of OSIRIS is already available between 450 and 650nm. The shorter wavelength range will be commissioned once the required blocking filters arrive. They are being tested at the IAC and they are expected to be available in OSIRIS shortly.

The OSIRIS MOS has been intensively commissioned and was offered to be used by the community since the 2014A semester.

The OSIRIS pipeline continues being completed and tested by the OSIRIS team. It is not yet ready but it will be available shortly as was indicated by the OSIRIS PI.

### **3.2 CANARICAM**

The spectro-polarimetry mode continues being commissioned with the generous collaboration of some members of the instrument team in a best effort basis.

The performance of CanariCam is also somewhat hampered because the fast-guiding functionality of the telescope is not yet ready. It is under test at the telescope but delayed due to some failures at the Nasmyth-A A&G Box that will be solved shortly.

According to the current schedule CanariCam will be dismantled in summer 2015 to permit the installation of EMIR at the nasmyth-A focal station. After some required modifications CanariCam will be available again in a folded-cass focal

station by 2017.

## **4. New instruments**

### **4.1 CIRCE**

CIRCE is a visitor instrument from the University of Florida (UdF). Its final tests are being completed at the UdF labs. It is scheduled to be installed in a Folded-Cass focal station in summer 2014 for its commissioning.

### **4.2 EMIR**

EMIR is nearly fully integrated and its tests are well advanced at the IAC labs. The Configurable Slit Unit or CSU is under cryogenic tests and some bugs are being corrected by the provider before its final acceptance at the IAC laboratories.

According to the current schedule, EMIR will be installed at the nasmyth-A platform in summer 2015 to initiate its commissioning. It is expected to be offered for general use in 2016.

### **4.3 FRIDA and Adaptive Optics**

The GTC AO System (GTCAO) that has been developed internally by GRANTECAN is nearly to be completed for its integration and test at the IAC labs. The IAC has offered to complete this system to cover the resources that GRANTECAN cannot provide now. IAC is waiting for some funding to be requested to the Regional Government to initiate that work.

The GTCAO system that will use natural guide star in its initial version is scheduled to be mounted at the GTC nasmyth-B platform in 2017 before that the instrument FRIDA. FRIDA is currently under construction by IA-UNAM and its collaborators. It is scheduled to install FRIDA in 2018.

But OSIRIS is currently at that focal station and it will be moved to the Main Cassegrain focal station once it is built for continuing OSIRIS operation. This is scheduled to be done in 2017.

An upgrade of the GTCAO system to use a laser guide star has been approved by the GTC Steering Committee. It will be developed by the IAC using funds from the Regional Government. The date to have that upgrade at the telescope is not yet available but it will be later than the complete commissioning of the natural guide star system.

### **4.3 MEGARA and MIRADAS**

Both represent the new generation of GTC instruments. After a successful Preliminary Design phase MEGARA has completed the detailed design of its optics, has initiated the procurement of the most critical blanks and has initiated the detailed design of the instrument. The contract for the development of MEGARA and its final schedule is now conditioned by the availability of resources that are being identified.

MIRADAS has also passed successfully its Preliminary Design phase. A final decision on the future of this instrument is conditioned to the final availability of

funds. Some discussions with the UF have to be taken shortly.

### **4.3 HORS**

HORS is a single source high resolution (30000) visible echelle-spectrograph proposed by the IAC as a visitor instrument. It is based on some optical elements of the old UES spectrograph used at the WHT. This proposal is currently under study and it could be installed at the GTC in 2015/6.

### **4.4 Telescope upgrades**

The main upgrades ahead for the telescope 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 two folded-cass stations are currently under development but the main-cass is waiting for resources.

The Telescope Control System is being obsolete and a migration to Linux is progressing.