

**REPORT OF THE 5<sup>th</sup> GTC USERS COMMITTEE MEETING**  
**HELD AT GTC**  
**LA LAGUNA, 24-25 JANUARY 2012**

## **1. Recent progress related to past reports**

The GUC was informed of the developments carried out to the telescope and their associated instrumentation since the last meeting. The GUC noted a positive general advancement in several of the basic issues identified in the previous report, as detailed below.

### **1a. Telescope status and progress**

Work on improving optical quality of the telescope has continued and the M1 reflectivity has decreased to 86% as few segments have been changed since the last meeting. The Scientific Database is now open and ready for normal use.

The dome is at the same status as in previous semester (the unvignetted telescope elevation limit is 72 degrees). The work had to be moved to summer 2013 because external help is needed. Due to limited resources of GRANTECAN the defined prioritization is Operation, Maintenance and Commissioning of the current instrumentation, CANARICAM and OSIRIS. The implementation of Non-sidereal tracking has been defined also as lower priority and could be ready within 2012.

Other topic of interest for the user is the work developed by GTC on Adaptive Optics. GRANTECAN expects to start system integration by the second semester of 2012 and start system tests in 2013. A progress report has been presented on Folded-Cassegrain foci (FC). The acceptance of the set (Rotator + AG Mechanics) is pending on mechanical work in the telescope and control software. This work needs to be finished when the second generation instruments are ready and the current ones need to be moved. Plans are to move OSIRIS to the main Cassegrain station and leave FRIDA in the current OSIRIS location and to move CanariCam to a folded-cass focus when EMIR arrives. CIRCE is also foreseen for a floded-cass station

### **1b. OSIRIS status and progress**

Fast photometry mode of OSIRIS and the blue TF have been already delivered and they are undergoing technical verification tests on the telescope by GRANTECAN. The on-sky commissioning will be made during 2012 and it is expected to be fully operative for semester 2013A. High priority has been

assigned to this, followed by the MOS. This order is motivated by two ESO-GTC programmes requiring the blue TF. The MOS mode still requires some implementation of both hardware and software that would probably mean that it might take longer (2013B). The OSIRIS manual v1.1 has been delivered to the community in the GTC webpages and a modified new version, in which the calibration of the phase effect is reported, will be delivered soon. A first version of the OSIRIS pipeline was delivered in October 2011 but not yet accepted by GRANTECAN.. A new one, fully tested by the OSIRIS extended team, will be delivered along this year. A workshop on OSIRIS reduction is being considered between GUC, OSIRIS team and GRANTECAN during 2012.

### **1c. CANARICAM status and progress**

Two runs for commissioning the instruments (another still pending in February) resulted in a good progress of the instrument. The numbers offered by the CANARICAM team on sensitivity (0.8mJ at 8.6  $\mu\text{m}$ ) and spatial resolution (0.3 arcsecs) can be considered at least as good as those obtained with the MIR instrument at GEMINI T-ReCS. Thus, the instrument is ready to operate in 2012A with low resolution spectroscopy at 10  $\mu\text{m}$  and low resolution imaging at 10 and 20  $\mu\text{m}$ . It is reasonable to expect to complete polarimetry commissioning in the coming months and offer this mode as soon as possible. GTC resources have been dedicated in the past months to be able to offer CANARICAM in the current semester. GUC congratulate them for this effort. Still pending cooling problems and the fast guiding system needs to be implemented for full operability of the system. GEMINI based IRAF pipeline is recommended for reduction purposes. GUC asked to CANARICAM team to provide cookbook to help users with reduction.

### **1d. EMIR status and progress**

Important progress has been made with the development of the EMIR instrument: no modification of the optics is expected, grisms tests have been performed at IAC and their parameters measured, filters are in good shape either already purchased or will come in a short term, mechanical status is also rather good (vacuum chamber to be delivered in Feb-March 2012, periscope mounted and aligned in laboratory, grism unit already in use being tested). The integration of the instrument in the laboratory is planned for second semester of 2012 and should be ready to start commissioning by late 2013.

### **1e. Other instruments status**

FRIDA has passed the critical design review. Plans are to be ready for Commissioning in 2015 and for offering to the Community on 2016.

MEGARA expects to have the preliminary design review in mid March and MIRADAS in October this year.

CIRCE is a visitor (GTC-UFlorida) instrument. It is expected to be shipped to the Observatory by the end of 2012 and will cover the Near Infrared gap till EMIR is in full operation

## **2. Operation Progress**

One of the main concerns of GRANTECAN o has been to increase the efficiency of the system. It is highly remarkable that the technical downtime has quickly evolved to levels of 10% and that the actual efficiency of the system has continuously increased since the first years. They have delivered in the past year (semesters 2010B and 2011A) 914 hours of observations.

The completion status of the compromise with ESO-GTC projects is about 41%. From the 8 proposals with granted time, one has been completed, 3 are currently inactive due to instrumental requirements and the rest are on-going. GRANTECAN see quite difficult to fulfil ESO-GTC commitments by the end of 2013.

General worries have been expressed about the still low rate of published papers due that over 100 programs have been fully completed and only 23 papers have been already published.

For the coming semester, 2012B, it is expected to devote again 80% of time for science and offer the broad-band, RTF and long-slit spectroscopy modes of OSIRIS and low resolution spectroscopy and imaging (not at the diffraction limited resolution) with CANARICAM.

## **3. Feedback from the user communities**

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

### OSIRIS

- Users urge to prioritize the MOS observations. GRANTECAN is given to MOS lower priority than the blue TF due to ESO/GTC compromise. However it is expected to be offered by 2013B.
- Pipelines for reduction of OSIRIS data are again requested by the Community. This is particularly important for the TF reduction. GUC has

proposed to GRANTECAN and the OSIRIS team the convenience to organize a workshop on this matter to share experiences with the users and eventually help them. GUC encourages the OSIRIS Community to participate in this event.

- Wavelength stability problem with high spectral resolution spectroscopy which precludes getting good radial velocity studies. GRANTECAN indicates that collimator malfunction due to a software change identified and fixed some weeks later.
- Lambda Calibration with TF observations. The accuracy provided by the OSIRIS team is of 1Å but for some scientific purposes a better calibration may be needed. GRANTECAN agrees that for these special cases additional data can be requested.
- One observer has reported an unexpected very low S/N with the 2500 grism. This is the only complaint received by GRANTECAN and they need more information from the user to be studied.
- Complaints received from Users due to low S/N imaging observations come from dark current problem. This complaint referred to the period that the cryostat was not holding the operation temperature, but this was resolved a long time ago.

### CANARICAM

- ESO/GTC users complain that Standard Calibration for CANARICAM is charged to the observing programs. GRANTECAN policy is the same for all the users and any calibration need to be taken at expenses of the observed program.
- Users suggest to revise the calibration standard list since it has been found that current list of standards includes contamination by binaries and variable stars. GRANTECAN appreciate any info on any non-standard in the list. These will be fixed once the information about which star it is reaches the observatory.
- A clear schedule for high resolution spectroscopy has been requested by users. GRANTECAN is progressing with the CanariCam commissioning and those observing modes are estimated to be ready not earlier than semester 2013A . Current priority is given to fast guiding and polarimetry.

## Phase 2

- Observing blocks of one hour seem to be very restrictive and cause large waste of time in overheads when longer observations of the same target are required. This has been assumed by GRANTECAN as the best time interval compromise to grant the requested observations, but there is no restrictions as such, and longer observing blocks are quite common. In risk of technical failures or changing in the observing conditions occurring after one hour are assumed by the project. GRANTECAN advises observers to keep, whenever possible, to these restrictive 1 hour OBs.
- Users wonder whether it will be possible to re-use the OB from previous semesters. GRANTECAN take notice of this request but announces that it is not possible now.

## Other worries

- Rapid response with ToO: Due to limited resources at GRANTECAN it is not possible always deliver data rapidly to the PI. On a best effort basis, if requested, a method is in place to deliver raw data in nearly real time to the PI.
- Users want to know at the end of semester whether and why the observations have been or have not been performed. GUC agrees with GRANTECAN that the observatory will actively inform PIs who have not received any data that their program has expired. Upon this communication by GRANTECAN to the users of the status of the observations, users are invited to request for the extra information they may need.
- Users have complained about both the lack of standard set of calibrations and the lack of a standard set of header keywords: GRANTECAN is aware of this header's problem and aim for a standard set of keywords in a few months. GRANTECAN claims that all relevant calibrations are usually delivered to users although errors do occur and are corrected where possible.
- TAC related matters: some users complain about lack of transparency on which proposals get finally done. GUC agrees to ask TAC to make public the rate and order of the proposal among the allocated ones. Comments raised by TAC/GTC about urgency to exploit GTC data has been clarified that are already included in the application form and it is carefully taken by the different TACs when evaluating proposals.

- Web pages out of date: the GUC is worried to hear that highly qualified astronomical personnel is in charge of updating the web pages, which apparently is a non-trivial undertaking. GRANTECAN argues limited resources to deal with a close attention to web pages not directly related to operation matters.

#### 4. Summary of the main pending problems identified

1. **CanariCam** operation is limited by non availability of fast guiding and the need to complete the commissioning process. This is largely limited by resources at GRANTECAN.
2. The overall **scientific efficiency** is not optimal, despite recent improvements. The GUC endorses the continuous drive by GRANTECAN to improve this.
3. A related topic is the **reduction of the GTC time available to the Spanish community** which will inevitably result after GRANTECAN fulfils its obligations to the UF and Mexican communities, the instrument teams (GT) and ESO (technical and science time for ESO-GTC programmes)
4. **Data Quality**: it is generally quite good, but some areas still need to be improved. The existing Quality Control mechanism seems to be adequate, but labour-intensive.
5. **Modes of OSIRIS** still pending
6. **Dome shutter** in partial operation only
7. All the first and **second-generation instruments** are late. Particularly serious is the situation of **EMIR**, for which current plans envisage first light not earlier than late 2013. Very little information is publicly available about schedules for all GTC instruments.
8. Insufficient **communication with and feedback from users**. Contacts with the GUC seem to have improved lately. It is expected that a rapid and efficient feedback between GRANTECAN and the users can be reached with the new blog generated by the GUC.

## 5. Summary of the GUC recommendations

1. We urge GRANTECAN to continue assigning the highest priority to:
  - a. Ready the remaining OSIRIS modes as soon as possible, in particular the MOS mode should be given a high priority due to its high demand from the community
  - b. Getting CanariCam ready as soon as possible with an updated information about the latest commissioning results.
  - c. Ready the dome to be able observations at all sky positions. This will be specially relevant for extrasolar planets research.

In addition to these priorities it has been also recommended an improvement of the scientific efficiency. For example by:

- i. Continuing the development of user-oriented high-level software tools for setting and checking the instrumental configuration and for quick-look at the data.
  - ii. Setting up a mechanism (together with the various TACs) by which targets from proposals of sufficient quality are available for the widest possible variety of weather conditions.
2. Regarding the 12B call for proposals, the GUC considers that the current state of commissioning of CanariCam (taking also into account the long delay suffered by this instrument and the advanced status of other instruments with competing capabilities) is sufficient to include it (in imaging, low resolution spectroscopy) in this call for proposals.
3. Devising and implementing automated data quality control checks, that both objectivize and speed up the process, freeing the Support Astronomers for other tasks
4. Improving the communications with users by:
  - a. 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.
  - b. Better defined tools to make the user easily to follow up the status of a granted observational program.
  - c. Providing information on the schedules and expected performances of the remaining, first, second and third-generation instruments. In particular, the current baseline schedules for the reception and

commissioning of the rest of the first and second-generation instruments for GTC should be made public to the community.

5. Making public rules in case of conflict of targets between the ESO-GTC programmes and those approved by the various TACs.
6. Taking step towards building automatic tools to ensure that time-critical observations begin on time (by leaving more time for setup and/or reminding the astronomers on duty of the importance of time-critical starts). This might involve larger overheads being assigned to this type of observations. If they are re-scheduled, it should be done in consultation with the PI.
7. Always providing the user with all relevant and standard calibrations for all modes and instrumental setups used in their OBs.
8. Making available as soon as possible data reduction pipelines. This is especially relevant for OSIRIS TF and MOS modes.
9. To modify tools in order to facilitate the use of the OB from previous semesters.
10. The instrument PIs and members of the GRANTECAN should provide the GUC with specific timelines that list the major aspects of the work plan and the dates these are expected to be achieved.
11. Liaise with all TACs to deliver to users the relative ranking of their proposals.
12. GUC will make available for the Community a user's blog to facilitate communication between users and both GUC and GRANTECAN.

## **GUC Members**

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Jorge Casares	Instituto de Astrofísica de Canarias (last meeting)
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