

**REPORT OF THE 4<sup>th</sup> GTC USERS COMMITTEE MEETING**  
**HELD AT CALP**  
**LA PALMA, 5-6 JULY 2011**

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

The GUC was informed of the developments carried out to the telescope 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. Despite some remaining issues, the priorities reported by GRANTECAN seem to be well placed.

The OSIRIS cryostat has been fixed. The GUC is glad that this outstanding problem has been finally solved and congratulates the GTC team for it.

The efficiency of the observations is still low. High-level routines for telescope and instrument control and for quick-checking of the data are reported to be almost ready. One issue that keeps affecting is the unavailability of suitable programmes for mediocre weather conditions (high seeing...).

High priority has been assigned to implementing the blue TF of OSIRIS, followed by the MOS. This order is motivated by two ESO-GTC programmes requiring the blue TF. Moreover, MOS still requires further resources that would probably mean that the fast readout mode might be ready for 2012B (together with the blue TF), while the MOS might take longer (2013A?).

Improvements in the dome shutter have allowed observing at higher elevations and faster dome closing, implying more operational flexibility. The previous schedule for solving this problem is maintained: not earlier than summer 2012.

Visitor mode has been offered in semesters 2011A and 2011B and will be offered in semester 12A. The fraction of Visitor mode observations is too low to be able to estimate the impact on efficiency or the increase in the difficulty of the scheduling.

An extension of 1 year in the deadline for providing data to the ESO-GTC programmes has been requested to ESO. This might somehow alleviate the pressure on the Spanish time, but it is insufficient to dispel the GUC worries about this issue.

A User Manual for OSIRIS was at the draft stage at the time of the meeting, being discussed between the OSIRIS and GTC operations team (it was made public on the GTC web pages shortly after the meeting). At the moment no pipeline is ready for current or future OSIRIS modes. It is unclear to the GUC what is the schedule for the release of the pipelines.

The commissioning of CanariCam in June 2011 was a major step forward, but much work is still needed. The imaging (but not diffraction limited) and low resolution spectroscopy modes are very close to full commission. Commissioning data on polarimetry have been obtained, but not fully analyzed yet. However, information

on the telescope+instrument sensitivity is limited, GTC M1/M2 are still not fully reliable, there is an M2 beam smearing stability issue and the fast guiding is not working. CanariCam will still not be fully commissioned at the time of issuing the 2012A call for proposals.

There are now 14 published papers using GTC data. A working group on GTC science productivity has been formed at IAC.

A prototype GTC science archive at CAB (INTA-CSIC) was shown to the GUC, containing all data observed before the end of February 2010. The prototype was satisfactory.

Preparations towards the “IV Science with the GTC” meeting in La Palma (November 16-18, 2011) are under way. All users are encouraged to attend and to present their latest results.

The GUC was pleased about the good news, despite the disappointment with CanariCam. The actions identified in the last GUC report were all addressed, and progress has happened in all of them.

## **2. Other issues not in previous reports**

None identified in this meeting.

## **3. New instruments**

The GUC is very worried about the delays of 1<sup>st</sup> and 2<sup>nd</sup> generation instruments.

- CIRCE: currently under construction at UF. There seems to be an uncertainty of about 1y on the date of shipping to GTC (beginning or end of 2012), and hence on the semester it could be offered. The issue about prospective sharing of the Nasmyth focus with CanariCam is still standing, since the folded Cassegrain foci are still not ready and there is not a clear schedule on when they will be
- EMIR: currently under construction at IAC, UCM, LAM, LAOMP. The reorganization of the team seems to have had a positive effect. It is expected to be offered for semester 2014B
- FRIDA: currently under detailed design at IA-UNAM. A preliminary arrival date to GRANTECAN could be 2015. The development of FRIDA is related to the development of the Adaptive Optics at GTC, which is also late, scheduled for laboratory system tests on late 2012 or 2013
- MEGARA: current baseline is to develop it with a single spectrograph, with first light on 2015
- MIRADAS: current baseline is MIRADAS-Lite to be able to observe a

- maximum of 5 sources simultaneously. First light is expected for 2016
- HORUS: is a proposal for a High Optical Resolution Ultra-stable Spectrograph based on UES (WHT).

## 4. Feedback from the user communities

The GUC has received feedback from users:

- A letter from members of the Spanish Planetary community about non-sidereal tracking. GRANTECAN has agreed to study the resources needed for non-sidereal tracking, if they are modest, as expected, they will try to implement it shortly. Full non-sidereal guiding will require many more resources, in competition with OSIRIS MOS and CanariCam fast-guiding implementation. In the meantime, some programmes (requiring short exposures or which can be done aligning the slit along the direction of the movement) could be performed
- A letter from members of the Spanish Exoplanet community on the issue of conflict of targets with ESO-GTC programmes (also raised by the members Exoplanet community from the University of Florida). Part of the problem seems to originate because the original target list of the two ESO-GTC programmes on this subject could not be carried out because of the dome shutter limitations. The proposing teams were invited by GRANTECAN to submit new targets, which were however not updated on the ESO web pages, and were later proposed to the various TACs by the user communities. ESO has been made aware of this and the GRANTECAN Steering Committee is considering this issue to avoid future conflicts.
- The members of the University of Florida commented about:
  - Exoplanet target conflicts: see above
  - Setting up real-time communication between the PI and the Support Astronomer to improve efficiency and data quality: observations at GRANTECAN are done in Queue mode, not Service mode, so it is not trivial how to organize this. Also GRANTECAN express their worries about disruption to telescope operations if having to attend to a remote observer
  - Time-critical observations starting late and being re-scheduled without consultation with PI: GRANTECAN admits there are delays in setting up, with technical problems forcing to restart the whole procedure
  - GTC efficiency: see above
  - CanariCam commissioning: if it is not offered in semester 2012A, but it happens to be ready in the next few months, perhaps a special Call for Proposals in shared risk mode could be issued
- Observers in Visitor mode reported a very large dispersion in personal experiences (from very good to worrying), with lack of use of tools developed

for quality assessment of the data, too rigid calibration plan and long acquisition times related to manual interventions and verbal interchange of information. Also, if the visitor could not carry out their main or backup programmes due to deteriorating weather conditions, a clear schedule for backup programmes and optimization of observations with respect to sky conditions, appeared to be absent. Finally, sometimes faults are treated as "normal": GRANTECAN finds this latter comment as very worrying, perhaps due to large number of past problems. Regular training of personnel on new tools is being set up

- An observer reported not having received calibration data for the binning requested and not observing the photometric standard on both chips in OSIRIS imaging mode. When the calibration data were requested they were provided and the interaction with the support astronomer was good
- The OSIRIS MOS mode is considered by many users as the most urgent instrumental development: GRANTECAN reports that this requires resources which are not available at the moment and that the blue TF has higher priority due to the need to fulfill Spanish commitments with ESO-GTC programmes
- Pipelines for reduction of OSIRIS data (and in the future CanariCam) are also requested regularly by users: the GUC considers that this is particularly necessary for non-standard instruments and/or modes, such as OSIRIS MOS and TF or CanariCam. As stated above, the GUC could not identify a clear schedule for the release of OSIRIS pipelines. The OSIRIS, FRIDA and EMIR instrument teams are under a contractual obligation to provide data reduction pipelines. There is no such obligation for CanariCam. However, some informal procedures either in IRAF or in IDL might be made available by the instrument team on a best effort basis

The GTC web pages are improving, but in some aspects seriously out of date.

## 5. Summary of the main pending problems identified

1. **CanariCam** can only be offered with limitations to the observers, mainly because with problems at the GTC end. This is causing great frustration in the user community, and it is delaying fulfilling obligations with ESO-GTC programmes.
2. The overall **scientific efficiency** is still low, despite recent improvements. The GUC endorses the continuous drive by GRANTECAN to improve this.
3. A related topic is the **drastic reduction of the GTC time available to the Spanish community** which will inevitably result after GRANTECAN fulfills its obligations to the UF and Mexican communities, the instrument teams (GT) and ESO (technical time and 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 mid 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.

## 6. Summary of the GUC recommendations

1. We urge GRANTECAN to continue assigning the highest priority to:
  - a. Getting CanariCam ready as soon as possible, with a clear schedule for telescope commissioning time.
  - b. Improving 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
  - c. Mitigating the impact on the Spanish time by developing a new timing scenario to fulfill other GRANTECAN obligations
2. Regarding the 12A 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 and polarimetry modes) in this call for proposals, with the understanding that, pending on further commissioning runs before the start of the 12A observations, the proposals will be on a shared-risk basis. Additional support from the CanariCam Instrument Team would be especially important in this early phase.
3. Carrying out in time current plans to implement full operation of the dome shutter.
4. Readyng 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
5. Devising and implementing automated data quality control checks, that both objectivize and speed up the process, freeing the Support Astronomers for other tasks
6. Improving the communications with users by:
  - a. Updating regularly the web pages (with news on instrument commissioning and selection, for example)
  - b. Engaging more actively the help of the observers on evaluating and improving the quality of the data. For example, offering quick re-

- observations of the OBs if any putative faults are reported swiftly back to GRANTECAN in a short interval (two weeks, for example)
- c. Sharing more fully current information held by GRANTECAN and the instrument teams on the current instrument performance. In particular, User Manuals for the current modes of OSIRIS should be released as soon as possible.
  - d. 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.
7. Setting up clear and transparent rules in case of conflict of targets between the ESO-GTC programmes and those approved by the various TACs.
  8. Taking steps 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
  9. Always providing the user with all relevant calibrations for all modes and instrumental setups used in their OBs
  10. Making available as soon as possible data reduction pipelines. This is specially relevant for OSIRIS TF and MOS modes, for example
  11. Exploring a prompt implementation of non-sidereal tracking

## ***GUC Members***

Francisco J. Carrera	(Instituto de Física de Cantabria), chair
Jorge Casares	(IAC), not present
Miguel Chavez	(INAOE), last meeting
Begoña García	(IAC)
Fred Hamann	(University of Florida), video conference
Pepa Masegosa	(IAA), video conference
Ignacio Negueruela	(Universidad de Alicante), video conference
Pablo G. Pérez	(Universidad Complutense de Madrid), last meeting