

Report of the 22nd GTC User's Committee Meeting

July 20 – 21, 2020. Held remotely on Zoom.

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1. General Remarks

The 22nd GTC users committee (GUC) meeting was held remotely due to the pervasive health crisis. The GTC director and representatives of the science, engineering and development divisions reported to the GUC about the current status, performance and maintenance of the telescope, as well as the delays caused by the ongoing health crisis and plans for new developments. This document summarizes the most important issues presented and the topics discussed during the meeting, including the recommendations from the GUC.

Impact of the crisis

Telescope operations were suspended between March 16 and April 22. They were resumed with the support astronomer working from the remote control-room at sea-level base and only the telescope operator present in the building. GTC estimate the delays on developments that depend directly on them or Spanish providers to be on the order of three months. There are, however, heavier impacts on instrumentation developments, which were commented later by the respective PIs.

Funding situation

There are no news to report on the financial situation of GTC, as all communication with the funding bodies has been put on hold by the pandemic.

Other news

Major integration work will take place in the near future (notably the move of OSIRIS, which is still the instrument of choice for the community to the Cassegrain focus). This will have an impact on the amount of time devoted to science during the next semesters, but will result in expanded and stronger capabilities.

The Scientific and Technical Advisory Committee (STAC) has issued a set of recommendations, including that

- HiPERCAM is reinstalled as soon as it is possible
- AO is fully and timely developed
- a better balance of ToO allocations is achieved
- legacy projects are implemented.
- steps towards turning GTC into a major player in time-domain astronomy are taken.

GTC suggests that the winter meeting of the GUC is from now on conducted remotely to reduce its carbon print.

2.- Responses from the GTC director to the GUC recommendations from the previous meeting

The director comments that the recommendations will be taken into account, but the health crisis has resulted on little progress during the five months since the previous GUC meeting.

3.- Update on science operations

GUC members were given reports on the performance of the telescope and all its instruments. The presentations can be downloaded from the GUC pages. In the following, we summarise some of the news presented.

In semester 2019B, GTC offered six different instruments. Despite this, more than 50% of the time requested is for OSIRIS programmes, mostly in long-slit mode. In 2020A, only four instruments were offered. The oversubscription factor was around 3.5. Time losses due to technical issues are now below the 5% level, while observatory overheads have decreased below 2%. About 75% of the data delivered correspond to Spanish TAC proposals (62.5% of these correspond to the IAC). As in the previous semester, 75% of the A queue programmes and 40% of the B queue programmes are completed.

The right ascension range between 10 and 12 hours is still heavily oversubscribed. There are many guaranteed time programmes requesting this range, and they take priority. In consequence, even A-band programmes may not be started. On the other hand, there are some RA ranges that are undersubscribed. Details may be found in the presentations available on the GUC pages. In addition, at the moment, bright time is generally undersubscribed all over the sky. Applications for bright time are encouraged, but no especial call is envisaged.

The quality control process will be soon improved by new products obtained from the online data process pipeline. Optimization and automation of operations is steadily progressing. The requirements for a new Phase 0 Tool (Time allocation tool) are being defined. This will result in a new way to define observations, providing more flexibility to the user.

By July 1, the number of published papers using GTC observations was 565, including 243 with a first author from Spain, 31 from Mexico and 18 from the UF. The vast majority of these papers use OSIRIS data. Typically, papers are published between 2 and 3 years after the programme is completed.

The operational plan for 2021A is still under discussion. Approximately 80% of the time is envisaged for science. MIRADAS installation and instrument commissioning has been delayed and is expected to happen in 2021A. OSIRIS commissioning at Cassegrain is also expected during the semester. Finally, preparation work for GTCAO installation is also to be started.

4.- Updates on instrumentation and GTC archive

There have been some new developments resulting in changes with respect to the schedule advanced in the previous report.

MIRADAS will be arriving during 2021. The health crisis has resulted in substantial delays due to shutdowns. At present installation is scheduled for Q2, but final schedule will depend on the evolution of conditions. The situation is similar with **FRIDA**. Access to the laboratories has been cut and the whole development is halted.

OSIRIS will be moved from its current location (Nasmyth B) to the Cassegrain focus in March 2021. It will be recommissioned with its old detector. The new detector will arrive only in late 2021. Once **OSIRIS** is removed from its current location, **HORuS** cannot be offered any more.

EMIR is mounted at the Nasmyth A focus. Funding has also been received for a new detector for **EMIR**, which would eliminate current problems with faint targets. At present, high detector noise prevents spectroscopy of sources fainter than about $m_{AB} = 19$. However, the new H2RG detector is not expected before mid 2021, and therefore the upgrade will take place after this. Meanwhile, users

are very strongly advised always to use the latest version of the ETC, which takes into account the current state of the detector.

MEGARA is mounted on folded Cassegrain focus F. Final repair work on the broken MOS positioners is currently ongoing. The reduction pipeline is constantly being updated and the instrument team will pass GTC some scripts that will result in an easier manipulation of the final results.

HORuS is routinely included in the observing queue as a visitor instrument. There are some issues with faint targets (around magnitude 17), since sky subtraction is difficult to attain. Dark sky is mandatory for these targets. Unfortunately **HORuS** cannot be used once **OSIRIS** is moved to the Cassegrain focus. No further upgrades are foreseen.

Canaricam was received in March 2019, after improvements. Several issues have been solved. It will be in operation from July 2020 until all its guaranteed time is completed. It may remain some more time in operation if **MIRADAS** is further delayed.

The GUC was asked to report on the proposal for the module **MAAT** (an integral field unit for a small part of the **OSIRIS** field of view) to become a visiting instrument. Based on the information collected, the GUC welcomes the opportunity offered by this new facility, as long as i) it comes at minimal (preferably zero) cost for GTC (including consumption of human resources) and ii) a full pipeline is provided by the instrument team so that the community can access science grade data products from MAAT.

There have been no updates on the high resolution spectrograph (HRS), which will be built by China. It is not expected before 2025.

GTC has started to deliver data for observing programmes through the GTC archive. Reduced data are available in the archives, some of them provided by the instrument teams and others reduced by the archive staff. The archive team would like to receive suggestions from the community on how to prioritise tasks, functionalities and activities in the archive.

5.- Time Allocation Committee (CAT) summary for semester 20B

The Spanish CAT received 133 proposals for semester 2020B, 59% of them requesting GTC observing time, for a total of 1937 hours. With the standard 70% overallocation, 993 h were allocated. The over-subscription factor has lowered to ~3.3 for the Spanish community. Further details can be found in the presentation. The call for Spain-Mexico collaborative proposals was not issued for this semester either. Work towards an agreement between the IAC and GTM directors is in progress.

6.- Summary of recommendations from the GUC

1.- The GUC would like to congratulate GTC for their handling of the health crisis. GTC was one of the first telescopes in the world back in operation after the initial shutdown.

2.- The GUC encourages GTC to work in close contact with instrument teams to make sure that the highest productivity is obtained from the instruments and the pipelines guarantee that data are most useful.

3.- The GUC would like to see the MOS mode of MEGARA working. Some users have reported issues with the flux calibration in IFU mode and the continued development of the pipeline is highly encouraged.

4.- The GUC would like a better communication to IPs of standing issues that are delaying the execution of proposals, especially those highly rated. In general, users could be informed via email of important news or updates at GTC, such as the shutdown and subsequent return to operations.

5.- The GUC is concerned about the lack of a high-resolution spectroscopic facility on the telescope once HORUS is removed. Since no alternatives seem feasible, GTC is encouraged to ask for a detailed schedule on the development of HRS.

6.- The GUC is concerned by the lack of availability of OSIRIS during 2021. This is by far the most heavily used instrument operating at GTC. Efforts to minimize offline time as much as possible are highly encouraged.

7.- The GUC still plan to conduct a poll to evaluate the opinion of the whole GTC community on the availability of pipeline products with little quality control in the archives..