



## Gemini Observatory Response to the UCG 2014 Report

Report to: Users' Committee for the Gemini Observatory (UCG)

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Gemini thanks the UCG for their report from the August meeting at the Gemini South base facility in La Serena, and we provide here some responses to the issues raised.

### Communication

- Communication continues to be a high priority for both Gemini and the UCG. The directorate and staff continue to provide a visible presence at partner national meetings and technical conferences providing the latest developments of interest to our users.
- To improve the dissemination of information on major problems, a process describing responsibilities for communication in the event of operational problems ranging from observatory unavailability to problems with data from an instrument has recently been created.
- An "Introduction to Gemini" web page is under construction and should be available in the third quarter. Furthermore, the US NGO is developing a web portal (<http://ast.nao.edu/nssc/usngo/>) to help all users, but with an eye towards new users.
- Real-time communication with our users will be explored in the coming year with the establishment of the SUSD

### Operations

- Despite some initial issues, the publication record for GeMS/GSAOI is ramping up. Counting papers from 2014 onward there are 9 GeMS publications in the Gemini Publication record. This is more than in every other year since commissioning combined. For comparison, during the same period NIRI and NIFS (non-AO) each produced 6 publications so productivity exceeds at least some seeing limited instruments
- The GeMS team is working to improve the astrometry performance. Two modifications requiring a small amount of effort and low cost are currently being considered. The first is a change to the existing calibration source to add many more sources using a stable pinhole mask. The second is the addition of a deployable diffraction mask for use with sparse fields.
- Implementation of laser guide star RTOOs will require staffing, planning, and technical changes. Technically, a relatively small amount of software work is required to allow pre-clearance of the entire sky for laser propagation. More significant are the staffing and planning changes required. Training will be necessary to handle the additional



complexities of on-the-fly queue adjustment to fit in a laser RToO. Finally and most importantly, staffing changes will be required to make the laser available more frequently. Each site is at a different stage in training staff in laser operation due primarily to technical differences between the systems.

- An alpha version of a static distortion correction script for GSAOI is undergoing testing. Very preliminary results indicate possible memory issues or a bug masquerading as such. With the departure of the primary developer, Mark Simpson, resources for this project are essentially non-existent. Once limited preliminary testing is complete by month's end, we might be able to release for wider testing (volunteers may be welcome). Alternatively, if it is not yet suitable for that, the project will go on-hold until resources become available.
- Fast Turnaround metrics are available: <http://staff.gemini.edu/ft/> - plus talk and poster at this meeting.
- The Proposal routes and observing modes page has been updated to explain and further differentiate the varieties of proposal routes as well as observing modes for accepted proposals- <http://www.gemini.edu/node/11101>
- Overheads have been reviewed and updated on the relevant GS instrument web pages. Some GN updates are still pending. Distinguishing between bright and faint target acquisition (e.g. GMOS and F2 longslit) has not yet been programmed but is under consideration.
- Due to the priorities of the upgrade of the GMOS-N CCDs and ongoing issues with the GMOS-S CCDs, effort has not yet become available to design and manufacture a 0.25" slit for GMOS-N. It is not likely to happen until after the commissioning of the GMOS-N CCDs.
- A task for uploading of OT timing windows was entered into our software work list last year (REL-1787). The task is to allow the user to upload a list of "timing windows" (the complement of avoidance windows). This task has not been scheduled yet but the need happened again in 15A so it may get higher priority, though this will not be trivial to implement. For now staff help these PIs with entering the timing windows.

### **Proposing and the OT**

- The names of the LPTAC will be made public at the end of the ITAC process when the 15B schedule and programs are released. At the same time, feedback to the PIs includes the quartile for each proposer's score along with the LPTAC's comments. Language reminding proposers that the proposals should be written for a broad audience was included in the 15B LLP CfP as suggested.
- We are continually working to simplify/automate the Phase II process for PIs. Recent work has focused on required underlying software changes that are prerequisites for further user changes. For example, we are working towards automating guide star selection.



- Guide star selection is critical due to the small patrol fields of many of the guiders and the relatively bright limiting magnitudes. Therefore, sufficiently bright guide stars are not always available and scientific choices must be made as a result. In some cases guiding slowly on a fainter star may be acceptable when degraded IQ is not important. For other science, this would not be acceptable.

Another option is to request a change in conditions. In some cases a small shift in position will make it possible to use a brighter guide star, but this may have scientific consequences (eg. MOS mask designs, the location of an object along the slit). If there is no guide star for a target, then the PI may need to make a choice about a replacement target. Therefore, the PIs should still make the final guide star choice, at least for science targets, even if that is just validating an automatically selected star.

However, we are working improve the guide star selection tools in the OT and make this process as automated as possible. The OT now gives feedback about guiding quality so that users can make more informed decisions. Also, the OT will now try to minimize vignetting of the science field of GMOS when making an automatic guide star selection. Soon this feature will work for all instruments. Selecting guide stars for standards that need to be observed along the parallactic angle is now much easier.

The goal is that the OT will be able to make an initial guide star choice for all targets and then actively assist the PI as changes are made. Therefore, the PIs will have higher confidence in the stars that they choose and both PIs and checkers can focus on only the targets/fields where there is a real problem with the guide stars.

With these software changes plus hardware changes to make the guiders more sensitive (eg. single-spot modes) then we may reach the situation where most PIs don't have to be concerned about guide stars for most targets. The system will still alert them of any issues in advance in order to minimize agonizing decision or loss of time at night.

- The idea for a finding chart tool has come up before. We will have to investigate this further.
- Gemini would like more feedback from the UCG on how useful a second, later phase II deadline would be for users for some late targets with the following constraints: PIs will need to ask the appropriate Head of SciOps for approval based at least partially on the availability of the contact scientist at the later deadline.
- OpsWG 29 in August will consider requesting a list of telescope time allocated to proposers in the last 5 years in the PIT PDF attachment template. If approved, it could be implemented in 16B.
- GMMPS v1.0.4, released in January 2015, offers substantial improvements over previous versions. A large number of bugs and other shortcomings in the code base have been identified and corrected since the integration of the Hamamatsu CCDs in GMOS-S. GMMPS now handles images and the mask-related meta-data in a much more robust and consistent manner.

Several internal consistency checks have been added. The graphical user interface has seen a major overhaul allowing for easier and more transparent mask creation. Overall,



this has very significantly reduced the number of GMMPS-related helpdesk tickets in 2015 (essentially, it sufficed to point users to the new version), and it facilitates mask checking on Gemini's side.

We will continue improving GMMPS, such as e.g. adding graphical indicators for second-order overlap. However, further major improvements of GMMPS will not be possible due to limitations imposed by 'skycat' and the Tcl/Tk language.

### **Data Reduction & Archiving**

- The in-house archive is expected to be ready for public usage in Sept 2015, allowing overlap time for an orderly handover with the CADC/GSA by the end of the year. As calibration linking will be much improved in the new archive, no further effort is being made to improve calibration association in the current GSA system.
- The Data Reduction Forum Challenge winners selected by the UCG were announced and time has been allocated for one of the two winners. A new contest is awaiting completion of an improvement cycle based at least in part on results from the 2015 UCG meeting with the purpose of achieving critical mass in participation.
- Establishment of the SUSD is on-going with a lot of behind the scenes activity like planning and hiring.