

# Report of Gemini's Science and Technology Advisory Committee (STAC), Nov. 2022

The STAC held its twenty-third meeting on 13-14 Nov 2022, in hybrid format (meeting in La Serena, Chile, and in hybrid format).

## STAC Membership

Craig Heinke, Chair	
Henri Plana, Deputy Chair	Jae-Joon Lee
Ryan Chornock	Damián Mast
Mark Chun	Marcelo Mora
Ivana Damjanov	Jenny Patience
Maria Drout	Gelys Trancho
Ryan Foley	Ashley Villar

## Congratulations

**23.1** The STAC congratulates the Observatory on the commissioning of GHOST, now nearly complete, and looks forward to it being offered to the community soon via FT and in the 2023B Call for Proposals.

**23.2** The STAC congratulates the Observatory on the resolution of the SCORPIO budget issues, and looks forward to a revised schedule for its completion.

**23.3** The STAC congratulates the Observatory on the smooth progress of the IGRINS-2 instrument, and looks forward to its commissioning in late 2023.

**23.4** The STAC congratulates the Observatory on starting a Conceptual Design plan for a Ground Layer Adaptive Optics facility, so as to be ready for possible future funding opportunities.

**23.5** The STAC congratulates the Observatory on the completion and delivery of both GNIRS IFUs, now in commissioning. We look forward to their being offered to the community.

**23.6** The STAC congratulates the Observatory on the successful PDR for GIRMOS, and looks forward to continued progress on its development.

**23.7** The STAC congratulates the Observatory and the GNAO team for starting the Conceptual Design of the GNAO Adaptive Optics Bench.

**23.8** The STAC congratulates the Observatory on the software development so far for GPP (which appears to be very user-friendly), TDA, and EPICS.

## **Recommendations/Endorsements**

**23.9** The STAC recommends the following science time fractions proposed by the Observatory for the upcoming semesters, specifically

1. Gemini North 2023A: **94.8%**. This includes IR Detector Controller and vibration testing.
2. Gemini North 2023B: **84.2%**. A&G Maintenance, GPP XT, IGRINS-2 commissioning.
3. Gemini South 2023A: **81.2%**. This includes the M1 coating shutdown, and GMOS-S detector recommissioning.
4. Gemini South 2023B: **93.5%**. No major engineering items.

**23.10** The STAC agrees with Gemini's suggested change in reporting on science time for future semesters, and recommends this to the Board.

**23.11** The STAC suggests slightly altering the instrument priorities as listed in the development report, shifting GeMS improvement up one notch, to give:

GNAO + GIRMOS, SCORPIO, GHOST, IGRINS-2, GPI-2, GeMS Improvements, GLAO CoD, GNIRS IFU and GPOL, MAROON-X facility conversion investigation work and IUP.

**23.12** The STAC endorses Gemini's plans to solve the GMOS-S amplifier 5 CCD issue. Maintaining capacity to address a variety of problems with the GMOS instruments should be a high priority.

**23.13** The STAC recommends that Gemini explore longer-term potential replacements for the GMOS Hamamatsu CCDs in more detail. We encourage the Observatory to consider preparing questions on e.g. the need for red or blue sensitivity, and multiple CCDs vs. single monolithic detectors, in a survey for the community.

**23.14** The STAC feels that the capabilities that GMOS provides are very important to the community, and we need to understand how to continue to provide those capabilities to the community as GMOS ages.

**23.15** The STAC appreciates the work of the Observatory and NGOs in successfully implementing the dual-anonymous review process (DARP). We suggest that the Observatory prepare an updated report for the May 2023 governance meetings similar to the TAC Gender Statistics report from May 2022 to track the ongoing effects of DARP.

**23.16** The STAC appreciates that Gemini will not be able to support all the instruments it currently has available, and needs to retire some in order to concentrate its efforts. As NIFS and GRACES are becoming (largely) redundant with the capabilities of GNIRS and GHOST, respectively, we think it is appropriate for Gemini to begin the process of retiring them, making their best efforts to successfully complete the existing LLPs on them (possibly by switching to

the newer instruments/modes). We also support the plan for IGRINS to shift off Gemini-S as IGRINS-2 is commissioned on Gemini-N, again with LLPs transitioning. The eventual retirement of NIRI will involve more loss of capacity (field of view), but also appears necessary, after appropriate testing of the GPOL polarization mode upgrade.

**23.17** Considering the substantial efforts in commissioning the new instruments, the STAC feels that Gemini's suggestion of a moratorium on new visiting instruments in 2023-24 is appropriate.

**23.18** The STAC looks forward to the feasibility study of GeMS with Flamingos-2 in 2024. The STAC suggests that the Observatory consider including GSAOI among instruments that may rotate off Gemini-S, if necessary. The question of how to shift instruments off Gemini-S might be well addressed by a community survey (see note 23.13).

**23.19** The STAC recognizes the seriousness of the Gemini-North primary mirror incident and that it is currently significantly affecting science and operations at the Observatory. We are encouraged by the seriousness with which the Observatory is addressing the incident. We support the current plan of action to assess damage and organize a fix. However, we have had limited information regarding the incident, and thus it is difficult to offer further advice. We encourage Gemini leadership to provide timely reports to the STAC and release appropriate information through frequent and regular communications to PIs and the broader astronomical community. Once the situation has stabilized, the STAC feels that the Observatory should re-evaluate its actions and response, including communication to the STAC and broader community.

**23.20** We thank Gemini for bringing together the GPI-2 Compensatory Time Working Group to discuss the policy and for considering the inputs from all of the participants. We recognize that there was not a complete consensus by the group but also that GPI-2 brings a range of values to the observatory and our communities. The STAC recommends that the Observatory move forward with the recommendations of the GPI-2 Compensatory Working Group and the formation of the GPI-2 SAC. We recommend that the GPI2 SAC should get clarity on how members will be accepted into the LLP. The STAC recommends that the policy for compensatory time should explicitly address the possibility that the instrument does not meet its expected performance, losing value to the community. We also have some concerns that this agreement sets a questionable precedent for instrument teams.

**23.21** The STAC is concerned that the software development plans are rather optimistic, given the current software engineering personnel available. We encourage the Observatory to prioritize GPP development (e.g. phasing of capabilities, instruments/modes, and testing) to enable efficient science output even if software development runs behind schedule. We also encourage the Observatory to pursue every plausible approach to ramp up software development hiring, including contractors and training astronomers in high-level software development.

**23.22** The STAC was worried to hear about the low uptake of the AEON/multi-facility option for 2022B and 2023A proposals. In our Nov. 2021 report, the STAC suggested greater outreach to the community to educate non-expert users. We encourage the observatory to increase AEON use through workshops, conference talks or webinars to introduce the new observational capability, and understand why there is limited usage.

**23.23** The STAC acknowledges and appreciates the efforts made by the observatory to explore longer-term thinking on maintenance. The STAC is encouraged that the loss of science time due to telescope infrastructure faults was reduced in the last semester compared to the previous one. The STAC feels that significant science will be lost unless these efforts continue and are systematized. The STAC recommends that the Observatory begin a systematic process of identifying critical systems and conducting preventive maintenance on them. The STAC suggests that this should be a significant priority in the medium term, with significant FTEs scheduled to devote to it when possible (perhaps once SCORPIO is commissioned, or earlier if possible).

**23.24** In future reports, the STAC would appreciate a graphical timeline showing FTE usage per instrument expected, vs. used, per semester, as a more understandable way of interpreting much of the information the Observatory already provides. The STAC would also prefer to see the instrument development updates compared to the prior baselines as a timeline graph, rather than a table.

**23.25** The STAC would be happy to have a representative of the Gemini Users' Committee join the STAC with observer status.

**23.26** The STAC wishes to sincerely thank René Rutten for serving as Interim Gemini Deputy Director for the last six months.

**STAC Points of Contact:**

ALTAIR: Jennifer Patience

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GMOS: TBD

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ToOs & AEON: Craig Heinke, Ryan Chornock, Ashley Villar

SCORPIO: Ryan Foley  
Visiting Instruments: Chair  
Default for other issues: Chair

**Future STAC Meetings:**

The dates for the 2023A meeting have not been finalized as of this writing. Pending Board approval, this meeting will likely be held in mid-May, with the format to be determined at a later date.