

# Report of Gemini's Science and Technology Advisory Committee (STAC) May 2019

The STAC held its sixteenth meeting on 13-14 May 2019 in Hilo, Hawaii.

## STAC Membership

Thomas Barnes	Damián Mast (video)
Fabio Bresolin	Marcelo Mora (video)
Jane Charlton (video, first day only)	Henri Plana (video)
Ryan Foley	Lisa Poyneer (video)
Craig Heinke	Andrew Skemer
Elliott Horch (Chair)	Eric Steinbring
Jae-Joon Lee	Marsha Wolf (video)

The STAC congratulates Gemini on reaching some major milestones with current instrument projects, and on the smooth operation of both telescopes since the last STAC meeting. We note that the Instrument report details many accomplishments that are consistent with previous STAC recommendations in terms of priority, particularly the progress with SCORPIO, GHOST, the Gemini North laser, and GEMMA hiring. Our specific recommendations and commentary on these and other issues as a result of this meeting are given below.

**16.1** The STAC congratulates the Observatory on the successful commissioning of the GN Toptica laser. The STAC recommends the following development priorities, which in order are: GNAO and RTC, SCORPIO, GHOST, ASM, GNAOI, IGRINS2, GIRMOS, NGS2, GNIRS Controller, IUP, DM0.

**16.2** The STAC generally endorses the Guiding Principles for GNAO and RTC but would like to suggest that the statement "Provide capability for future modes without undue rework" be added after "Employ currently available technology" in the GNAO project priority list.

**16.3** The STAC encourages the Observatory to continue exploring possible linkages between GNAOI and GIRMOS, which we view as especially valuable considering the strong pressure anticipated upon the available telescope ports.

**16.4** The STAC is interested in the possibility of GNAOI coverage redward of 2.5 microns. The STAC suggests that the possibility of extending GNAOI coverage to 5 microns be explored and weighed against the cost and availability of a 5-micron cutoff H4RG.

**16.5** While the STAC recognizes the time constraints and does not wish to impede the process of offering the GNAOI RfP, we would like the Observatory to provide the STAC with a copy of the GNAO science flowdown requirements case before the Request for Proposals for GNAOI is issued, and a draft of the GNAO conceptual design as soon as it is available.

**16.6** The GEMMA funding for GNAO is a consequential opportunity, and the STAC is highly encouraged that the project leadership has already been staffed with personnel who have extensive project management and relevant technical expertise.

**16.7** The STAC suggests that the RTC project represents an excellent opportunity to build a capability for instruments beyond GNAO and the STAC encourages the Observatory to continue considering the option of developing the RTC in-house as a possible means to develop more expertise in this area for a range of future projects.

**16.8** The STAC recognizes that the GNAO funding structure places significant constraints on the project. Given this, we recommend the team develop a comprehensive understanding of decision points, completion criteria, and possible mitigation strategies of reduced technical complexity that might be needed to meet schedule or budget constraints, while still maintaining scientific usefulness.

**16.9** The STAC strongly supports the development of the adaptive secondary mirror as soon as it is feasible. The STAC encourages the Observatory to move the feasibility study for the ASM to late 2019, to ensure that planning for the ASM requirements can inform the GNAO + RTC development.

**16.10** The STAC is pleased to see the possibility of an RfP for the Instrument Upgrade Program (IUP) in 2020, although we recognize the heavy load on the instrument scientists during this time of heavy development. The STAC agrees that this is an important way to remain engaged with the user community. We suggest that a focused call may be wise in this particular case, given the range of other activities the Observatory is undertaking.

**16.11** The STAC congratulates the Observatory on the work done to allow IGRINS to return to Gemini. We endorse the draft MoU for IGRINS presented at the meeting.

**16.12** The STAC is pleased to see the TDA working group has been established and is very active. We appreciate the effort of that group to produce a preliminary report for this meeting, and we look forward to a second, more complete report in advance of our next meeting in November. Regarding single-TAC versus time exchanges, we appreciate the complexity of the issue, and the difficulty of balancing a variety of scientific and political issues. Having said that, we recommend that the TDA working group should broaden the scope of its discussions to include other questions on which the Observatory needs guidance. STAC members are happy to help generate a list of relevant topics for the working group to focus these discussions.

**16.13** The STAC endorses the plan to hold the next Gemini Science Meeting in Seoul, Republic of Korea, in 2020, in conjunction with the K-GMT Science Program User's Meeting.

**16.14** The STAC is pleased to see the rebound in the number of Large and Long Programs in response to the latest call.

**16.15** The STAC endorses the science time request from the Observatory as follows:

2019B: 84% for the South and 83% for the North.

2020A: 93% for the South and 96% for the North.

**16.16** The STAC thanks the Observatory for providing the statistics on the fraction of targets of opportunity that were not triggered. We suggest that continued data collection will be informative for choosing operational modes as the number of targets of opportunity increase.

**16.17** The STAC is pleased to see the development of the data reduction pipeline DRAGONS, and the STAC looks forward for its release to the community. We encourage the Observatory to work with other pipeline developers in NCOA, the broader Gemini community, and other observatories to produce efficient and broadly applicable software.

**16.18** The STAC acknowledges the clarification regarding the protocol for conditions under which the Observatory staff would contact the STAC instrument point of contact and welcomes opportunities to be engaged.

**16.19** The STAC congratulates the MAROON-X team on their progress towards first-light. The STAC suggests that Gemini appoint an external referee to review the team's on-sky estimate of the instrument's radial velocity precision.

**STAC Points of Contact:**

ALTAIR & Gemini North AO: Eric Steinbring and Lisa Poyneer

F2: Marsha Wolf

GeMS: Eric Steinbring

GHOST: Henri Plana

GMOS: Marcelo Mora

GNIRS: Marsha Wolf

GRACES: Fabio Bresolin

GPI: Jae-Joon Lee

Instrument Upgrade Program: Damián Mast

ToOs: Craig Heinke

SCORPIO: Ryan Foley

Visiting Instruments: Elliott Horch

IGRINS2: Jane Charlton

Default for other issues: Chair

**Future STAC Meetings:**

The 2019B meeting will be November 18-19, 2019 in La Serena, Chile.