



Henry Roe

A Vision for Gemini's Future

Gemini's Science and Technology Advisory Committee (STAC) held its semester 2012B meeting in Hilo, Hawai'i, to discuss and recommend near- and mid-term priorities for the Observatory, as well as to continue the discussion of its long-term vision. The meeting covered a wide range of topics from instrumentation to operations. This article highlights a few of the committee's recommendations.

The Science and Technology Advisory Committee (STAC) held its 2012B meeting at the Hilo Base Facility on October 29-30. The STAC's report, which was delivered to the Board at its November 2012 meeting, will be publicly available at: <http://www.gemini.edu/node/11903>. The STAC's charge is to focus on both near- and mid-term priorities for the Observatory, as well as the long-term vision that drives all other decisions.

The new year promises to be an exciting and challenging one for the Observatory, particularly in the South — with Flamingos-2, the Gemini Multi-Conjugate Adaptive Optics System (GeMS), and the Gemini Planet Imager (GPI) all expected to make major progress toward commissioning and regular science use.

Almost certainly, the STAC will have to make some difficult decisions regarding resource tradeoffs among those three instruments and other high priority projects, such as upgrading detectors on Gemini South's Multi-Object Spectrograph (GMOS-S). In its 2012B report the STAC has already made recommendations for handling some of the likely resource conflicts and will be closely engaged with the Observatory as the year proceeds.

The Long-Term Vision

The STAC continues to discuss and refine its long-term vision for the Observatory. Key to this vision is recognizing that Gemini must serve a broad community with diverse scientific needs. To remain relevant and productive, Gemini must position itself to take advantage of opportunities with new capabilities coming online (e.g. the Large Synoptic Survey Telescope, James Web Space Telescope, Atacama Large Millimeter Array, etc.) and as new exciting sub-fields of research come to prominence. Combined with the current era of severely limited resources for new instrumentation and upgrades, this motivates the STAC to focus future development efforts on workhorse instrumentation that has broad scientific appeal and enables a wide range of science cases. In 2013, as the STAC works to develop and refine its long-term vision for Gemini, I encourage you, our users, to contact your STAC representative or myself with input on what you want Gemini Observatory to be in the 2020 and 2025 timeframe.

More Immediate Goals

More immediately, in order to remain vibrant and continue to deliver new capabilities, progress on the Gemini High-resolution Optical Spectrograph (GHOS) carries on, and the STAC has discussed possible models for deciding on and procuring the next instrument after GHOS. We feel it is extremely important to have significant involvement in choosing the next instrument by the community and instrument building groups.

In consultation with Gemini development staff, and to fit with the STAC's developing vision for a Long-Range Plan, the STAC created resolution 3.12, which lays out a set of general principles for selecting this Fourth Generation Instrument #3. The plan is to release a Request for Proposals in 2013 directed at instrument groups. We will be asking them to propose for funded design studies of instrument concepts conforming to the broad principles laid out by the STAC. Our intent is to select several of these proposals for funding. Once the selected teams complete the design studies, the STAC, Board, and Obser-



vatory would select one that would move forward through the next stages of conceptual design, and eventually to construction.

The 4+AO Challenge and Visitor Instruments

One of the challenges of working within the 4+AO (four instruments plus adaptive optics) model is providing exciting niche capabilities. It was striking at the Gemini Science Meeting in San Francisco how much interesting new science people now want to do with high-resolution mid-infrared spectroscopy on large aperture telescopes. But, developing a new facility-class instrument to offer this capability would be expensive and take many years. While producing transformational results in several fields, it would likely not receive enough use semester-after-semester to justify dedicating one of those valuable four instrument slots for a decade or more.

This is an excellent example of a niche capability at which Gemini can excel. However, to offer such a capability to its community, Gemini must seek creative alternatives to the traditional model of building facility-class instruments that are then operated continuously on the telescope for a decade or more. This is where the STAC believes visitor instruments can play a key role in Gemini's portfolio of capabilities offered to users. That promising high-resolution mid-infrared capability is available if the Texas Echelon Cross Echelle Spectrograph (TEXES, see: <http://www.gemini.edu/?q=node/10231>) is brought back to Gemini as a visitor instrument.

As we said in our 2012B report: "The STAC views a vibrant visitor instrument program as a key part of its vision for greater community engagement, bringing new capabilities to the community quickly, and providing more niche capabilities than are available with the facility workhorse instrument suite."

The STAC recognizes that a visitor instrument program must be managed carefully to ensure that Observatory resources are not over-burdened or over-committed and the visiting instruments are not only scientifically desirable but productive as well. The STAC is working with the Observatory on finalizing a new Visitor Instrument Policy that lays out the principles and requirements for visiting instruments. In line with the current draft of that policy, the STAC endorsed Gemini's plans to offer community access to TEXES and the Speckle Camera in a visitor instrument mode in 2013B.

The STAC continues to believe that Large- and Long-term Programs (LLPs) are a valuable component of the overall ensemble of observing projects at Gemini. Additionally, by encouraging more LLPs across the entire partnership it benefits the overall scientific output of the Observatory. In resolution 3.8 of our 2012B report, we made a set of recommendations to the Board. The Board has since formed a working group to consider these recommendations and decide a path forward. Stay tuned in early 2013 for more on this initiative.

These are just a few of the topics covered in the STAC's 2012B report. I encourage you to read the full report and the Observatory's response once it is available. It is available at the URL provided at the start of this article.

The STAC's 2013A meeting will be in Tucson in April and its 2013B meeting in La Serena in October. Please contact your STAC representatives or myself with questions and input. Next year promises to be another busy year for both the Observatory and the STAC, with many consequential decisions needing to be made. We greatly value your input.

Henry G. Roe is an astronomer at Lowell Observatory and Chair of the STAC. He can be reached at: hroe@lowell.edu