

NOAOGEMINISCIENCECENTER

TUCSON, ARIZONA • LASERENA, CHILE

Announcing the NOAO Gemini Science Center (NGSC)

Taft Armandroff

Within the structure of the Gemini Partnership, each partner agency created a national project office to spearhead its participation. The project offices form the nodes of communication between the Gemini Observatory and each partner country, providing input and advice to Gemini on partner perspectives, and communicating to the national communities the capabilities and science opportunities that Gemini presents. NOAO is the home of the US national project office, which we have reorganized into the NOAO Gemini Science Center (NGSC). Our change in name, from the construction-era designation of the US Gemini Program to the NOAO Gemini Science Center, is intended to clearly express our science emphasis and our association with NOAO.

Science is the focus of NGSC's mission in the following ways:

- NGSC informs the US community of Gemini scientific observing opportunities via numerous means, including the *NOAO-NSO Newsletter*, the NGSC Web pages, an NGSC booth at winter AAS meetings, and presentations at US astronomy departments.
- NGSC invites scientific proposals for Gemini observing, performs technical review of these proposals, and applies the NOAO Time Allocation Committee (TAC) system to the proposals. NGSC also provides user support for the approved observing programs.
- NGSC intends to organize and conduct science workshops to highlight particular areas of Gemini science and instrumentation that are both timely and productive.
- NGSC plans and oversees the development of scientific instrumentation in the United States for the Gemini telescopes.
- NGSC provides selected operations support for Gemini science observing. For example, all queue observations using the Phoenix infrared spectrograph involve NGSC staff.
- NGSC provides support to the US community for the reduction and analysis of Gemini data.
- Finally, the NGSC permanent staff and postdoctoral fellows conduct frontline scientific research using Gemini.

Gemini Observing Opportunities for Semester 2003B

Taft Armandroff

The NOAO Gemini Science Center (NGSC) invites and encourages the US community to submit proposals for Gemini observing opportunities during semester 2003B. Gemini observing proposals are submitted and evaluated via the standard NOAO proposal form and Time Allocation Committee (TAC) process. Although the Gemini Call for Proposals for 2003B will not be released until March 1 for the US proposal deadline of March 31, the following are our expectations of what will be offered in semester 2003B. Please watch the NGSC Web page (www.noao.edu/usgp) for the Call for Proposals for Gemini observing; this will unambiguously establish the capabilities that one can request. Several important new instrumental capabilities are expected to be offered in semester 2003B, as described below.

Gemini North:

- The GMOS optical multi-object spectrograph and imager will be offered in 2003B. Multi-object spectroscopy, long-slit spectroscopy, integral-field unit (IFU) spectroscopy, and imaging modes will be available. Nod-and-shuffle mode, which greatly enhances sky subtraction, will be offered in 2003B.
- The NIRI infrared imager/spectrometer will be offered in 2003B. The $f/6$ imaging mode (over a 2-arcmin field) and $f/6$ grism spectroscopy mode are expected to be the most popular configurations. NIRI functioned well during its queue observing runs in December 2002.
- GMOS and NIRI will be offered in both queue and classical modes. It is expected that classical mode will be offered only to programs with a size of three nights or longer.
- Michelle is a mid-infrared (8- to 25-micron) imager and spectrograph for shared use between Gemini and the United Kingdom Infra-Red Telescope (UKIRT). Observing modes include direct imaging and long-slit spectroscopy with spectral resolutions of approximately

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Gemini Observing Opportunities continued

200, 1,000, and 30,000. Michelle was delivered to Gemini Observatory in late 2002. A period of characterization and commissioning of Michelle is presently underway, after which Michelle is expected to be available for scientific use. As of late January, we believe that some modes of Michelle may be included in the 2003B Gemini Call for Proposals.

- The Altair adaptive optics system was delivered to Gemini North in October 2002. Altair commissioning, in natural guide star mode with NIRI, has begun. During 2003B, it is expected that Altair commissioning will be completed, and system verification will be performed. Therefore, Altair will probably not be available for user proposals until semester 2004A.

Gemini South

- The Phoenix infrared high-resolution spectrograph will be offered in semester 2003B.
- The Acquisition Camera will be available for Quick Response in 2003B.
- The GMOS-South optical multi-object spectrograph and imager is expected to be offered during semester 2003B. GMOS-South was delivered to Cerro Pachón in late 2002. Integration of GMOS-South with the telescope and software systems is underway; this will be followed by commissioning and system verification. The imaging, long-slit spectroscopy, multi-object spectroscopy, and nod-and-shuffle modes of GMOS-South are expected to be offered in 2003B. Also, all GMOS-South observations are expected to be performed in queue mode.

- It is expected that the T-ReCS mid-infrared instrument may be offered in 2003B, in imaging mode. As of late January, T-ReCS has not yet passed its pre-ship acceptance test at the University of Florida. Hence, it is particularly important to check the Gemini Call for Proposals (in early March) regarding the availability of T-ReCS in 2003B.

Detailed information on all of the above instrumental capabilities is available at www.us-gemini.naoa.edu/sciops/instruments/instrumentIndex.html.

We remind the community that US Gemini proposals can be submitted jointly with collaborators in another Gemini partner; a collaboration simply submits proposals in each relevant partner country, explicitly noting how much time is requested from each Gemini partner. Such multipartner proposals are encouraged because they access a larger fraction of the available Gemini time, thus encouraging larger programs that are likely to have substantial scientific impact. In order to facilitate multipartner proposals, the United States accepts Gemini proposals both with the standard NOAO proposal form and with the Gemini Phase I Tool (PIT).

Please note also that in addition to Gemini observing capabilities, proposers may request other public-access facilities in the US observing system required to carry out a science program, as part of the same proposal. For example, one can request imaging with ISPI on the CTIO 4-meter and spectroscopy with GMOS on Gemini South in the same proposal without facing double jeopardy.

Reminders about Gemini Observing Proposals

Taft Armandroff & Dave Bell

For Gemini observing proposals for semester 2003B, we wish to remind proposers about several procedural issues that will help NGSC and the Time Allocation Committee (TAC) in evaluating the proposals.

- Include the proper overhead time for your observing program. Overhead should be included in both the total time request, and in the “observation times” of each target. The rules for calculating overheads are given in the “Performance and Use” sections of Gemini’s instrument Web pages.
- Gemini proposals require specification of the observing conditions for cloud cover, image quality, sky brightness, and water vapor. Think carefully about what observing-condition bands should be specified in your proposal. Specifying the conditions too tightly reduces the probability that your program will be approved and executed. Our advice is to specify the worst conditions under which your program can be successful. Also, please explain your choice of observing-condition bands in your technical description.

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Reminders about Proposals continued

- For GMOS multi-object spectroscopy, pre-imaging with GMOS is required currently for mask fabrication. Please be sure to clearly include the observing time needed for this pre-imaging.
- If your observing program is being proposed jointly with another partner country, be sure to enter both the total time requested from all partners and that requested from the US TAC. Also, please specify who is the overall contact for the multipartner program. New fields are available on the NOAO Web proposal form for supplying this information.
- If you plan to use Gemini's Phase I Tool (PIT), be sure to read and follow the guidelines available at www.noao.edu/naoaprop/help/pit.html.
- If you plan to download a LaTeX template to be filled in and submitted by e-mail, be sure all target and instrument information is completed on-line (including guide stars, filters, etc.). Changing such information in the LaTeX file will often produce proposals that are incomplete or invalid.

NGSC Support of Gemini Phase II Submissions

Taft Armandroff

All principal investigators (PIs) with approved Gemini observing proposals are required to undertake a Phase II program submission. Successful proposers use the Gemini Observing Tool (OT) to define their programs in detail. A new version of the OT is released by Gemini each semester in order to support newly released instruments and any other changes in instruments or observing procedures. The OT for 2003A ("river") was released in early January (see www.us-gemini.noao.edu/sciops/OThelp/otInstallation.html).

New for 2003A, NGSC staff will be the point of contact for Phase II submissions for US projects utilizing GMOS, NIRI, and Phoenix. NGSC (and the other national Gemini offices) will assume the role previously held by Gemini for

Phase II submission checking and the resulting interactions with astronomers regarding submissions issues. These three instruments represent the vast majority of US Gemini observing programs.

Phase II for the following developmental or more specialized instruments will continue to be handled by Gemini: Michelle, CIRPASS, and the Acquisition Camera. Hence, for GMOS, NIRI, and Phoenix, US proposers should interact with NGSC staff about Phase II and submit their Phase II proposals (xml files) to the NGSC staff contact. A list of staff contacts for each 2003A Gemini observing program can be found at www.us-gemini.noao.edu/sciops/schedules/schedSupport2003A.html.

Phoenix News

Ken Hinkle & Steve Ridgway

In December 2002 and January 2003, there were two Phoenix queue blocks and one classically scheduled Phoenix block at Cerro Pachón. The classically scheduled block had two observing teams, both including one observer with previous experience observing with Phoenix at Kitt Peak. Both teams obtained excellent data and were very pleased with their observing experience. Observers who are interested in classical scheduling should note this in their observing proposal. While the national office can make recommendations, the assignment of classical versus queue nights is ultimately handled by Gemini Observatory and not by the national Gemini offices.

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Phoenix News continued

For the Phoenix queue blocks, the NGSC must supply a staff member to be the Phoenix observer. Gemini South staff runs the queue. Ken Hinkle was the December queue observer; Bob Blum and Steve Ridgway were the January observers. Steve says that after he was given a solid briefing and update on the operation, Bob handed him the keys and he was able to man the Phoenix console solo for the last week of the run. Steve reports:

“Bernadette Rogers, and later Phil Puxley, were the Gemini queue scientists who set out the observing program hour by hour based on the conditions and the program requirements and priorities. This was a very impressive run. There were eight consecutive clear, calm nights. The seeing was usually quite stable from the very beginning of the night to the end. Most of the time the delivered image quality was 0.5 arcsec at K or better, and two full nights had image quality of better than 0.3 arcsec at H. A variety of observations were carried out in the H, K, and M bands. Highlights included observing prominent CO fundamental emission lines from young sources, obtaining spatially resolved spectra of H₂ emission from a protoplanetary nebula and from an HH object, and recording high-resolution spectra of the newly discovered, very nearby T Dwarf eps Ind B in the last few minutes that it was available this season. There were no instrument problems, and the few telescope issues were inevitably resolved within a few minutes. The entire queue process ran like a well-oiled machine. It is really a delight to see Phoenix utilized so effectively and extensively on a wide variety of programs.”

NGSC Booth at the AAS Meeting in Seattle



The NOAO Gemini Science Center booth at the January 2003 AAS meeting was a busy place. From left to right, top: Larry Ramsey (Penn State University), Taft Armandroff (NGSC), Catherine Pilachowski (Indiana University), Bruce Hrivnak (Valparaiso University), Ken Hinkle (NGSC), Bernadette Rodgers (Gemini Observatory); bottom: Matt Mountain (Gemini Observatory), Dave Bell (NOAO) explaining the Gemini Observing Tool to Peter Joachim and Julianne Dalcanton (University of Washington), and Wayne Van Citters (NSF).



US Gemini Instrumentation Program Update

Taft Armandroff & Mark Trueblood

The US Gemini Instrumentation Program continues its efforts to provide highly capable instrumentation for the Gemini telescopes in support of frontline science programs. This article gives an update on Gemini instrumentation being developed in the United States, with status as of late January.

GNIRS

The Gemini Near-Infrared Spectrograph (GNIRS) is an infrared spectrograph for the Gemini South telescope that will operate from 1 to 5 microns and will offer two plate scales, a range of dispersions, and both long-slit and integral-field modes. The project is being carried out at NOAO in Tucson under the leadership of Neil Gaughan (Project Manager), Jay Elias (Project Scientist), and Dick Joyce (Co-Project Scientist).



GNIRS on the NOAO Flexure Test Facility in December 2002.

In December, the GNIRS Team carried out their second cycle of GNIRS cold testing. The cold cycle was performed with an engineering-grade array installed in GNIRS. During the cold test, the instrument reached the desired operating temperature, all motors and mechanisms performed as designed (including the on-instrument

wavefront sensor provided by the University of Hawaii's Institute for Astronomy), spectra were obtained with the detector, and the instrument was controlled by the complete GNIRS software suite. In addition, initial flexure testing was carried out using the NOAO Flexure Test Facility. The team is currently making adjustments and enhancements to GNIRS based on a "punch list" from the cold test. Overall, 95 percent of the work to GNIRS delivery has been completed.

NICI

The Near Infrared Coronagraphic Imager (NICI) will provide a 1- to 5-micron dual-beam coronagraphic imaging capability on the Gemini South telescope. Mauna Kea InfraRed (MKIR) in Hilo is building NICI, under the leadership of Doug Toomey.



The NICI dewar being fabricated at the machine shop.

The NICI cryostat components are undergoing fabrication, as are the optical elements. In addition, development of the array controller for the two NICI ALADDIN arrays is progressing well. Overall 46 percent of the work to NICI final acceptance by Gemini, planned for December 2004, has been completed.

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Program Update continued

T-ReCS

The Thermal Region Camera and Spectrograph (T-ReCS), is a mid-infrared imager and spectrograph for the Gemini South telescope, under construction at the University of Florida by Charlie Telesco and his team.

In late November, Gemini and NGSC personnel traveled to Gainesville, FL, and tested whether T-ReCS meets its optical performance requirements. The image quality achieved was outstanding, and T-ReCS passed all of the acceptance requirements related to optical performance. The electronic, mechanical, and software acceptance tests still remain. The T-ReCS team is devoting particular attention to detector performance tests and enhancements to ensure that T-ReCS meets those performance specifications. This will allow NGSC, Gemini, and Florida to complete the pre-shipment acceptance test of T-ReCS.

GSAOI

The Gemini South Adaptive Optics Imager (GSAOI) will be used with the multi-conjugate adaptive optics (MCAO) system being built for the Gemini South telescope. The imager will cover wavelengths between 1 and 2.5 microns, and will employ a $4K \times 4K$ HgCdTe detector mosaic.

NOAO and the Australian National University (ANU) were both selected to develop independent conceptual designs for GSAOI. The NOAO GSAOI Team produced a well-developed instrument concept, and the results were documented as a report for Gemini. Both NOAO and ANU presented their instrument concepts to the Gemini Design Review Committee in late August in Hilo, and revised proposals (in October) following significant changes to the requirements requested by Gemini. After what Gemini called an extremely close competition, in which the external review committee concluded that either team could build an excellent imager for the MCAO system, the decision was made to award the fabrication contract to ANU.

Gemini Next-Generation Instrumentation Planning

Taft Armandroff

Gemini Observatory will hold an international planning meeting for next-generation Gemini instrumentation on 27–28 June 2003. The goal of this meeting is to identify new science opportunities for Gemini in the 2004–2010 window, and to define the instrumentation that will enable these science opportunities.

With the assistance of NGSC, Gemini arranged to hold this meeting in Aspen, CO. This location facilitates participation by members of the US astronomical community. Gemini envisions approximately 40 participants, selected by the international organizing committee (chaired by Doug Simons, Gemini Associate Director for Instrumentation). The Aspen meeting will be organized around four science-themed breakout groups:

- Stars, the Solar System, and Extrasolar Planets
- Star Formation Processes and the Interstellar Medium
- Structure and Evolution of the Milky Way and Nearby Galaxies
- Formation and Evolution of Distant Galaxies and the High-Redshift Universe

The most recent Gemini instrumentation meeting was held in Abingdon, UK, in January 1997.

NGSC will organize a preparatory workshop “Future Instrumentation for the Gemini 8-m Telescopes: US Perspective in 2003” for the US community. The US meeting will follow the structure of the international meeting. The goal of the US workshop is to encourage discussion about how this Gemini planning process relates to the scientific goals of the US community, and to develop compelling science cases and instrumentation plans for input to the “Aspen” planning process. All the US delegates to the Gemini Aspen instrumentation meeting, the US Gemini Board representatives, and members of the US Gemini Science Advisory Committee are expected to participate. The US workshop is planned to occur in April or May in the Scottsdale, AZ, vicinity. For more information about the US planning processes for Gemini next-generation instrumentation, please contact Taft Armandroff, Director of NGSC (armand@noao.edu).