# A Brief Overview of the Governance Structures of NOAO and the International Gemini Observatory

*Verne V. Smith & Kenneth H. Hinkle*

Future planning for US open-access time to ground-based telescopes is one item that will be discussed by the upcoming decadal survey panels and committees. The NOAO Access to Large Telescopes for Astronomical Instruction and Research (ALTAIR) committee is currently reviewing US future needs for, aspirations for, and access to large ground-based telescopes of aperture 6.5 to 10 meters. ALTAIR will issue a report during the first quarter of 2009.

Within the ground-based open-access system, the US fraction of time available on the international Gemini Observatory's two 8.1-meter telescopes is the largest single block of time in the 6.5- to 10-meter class. Looking toward the next decade and the role of Gemini in the US ground-based system, we present here a brief overview of the management of both NOAO and Gemini to familiarize the US user community with the interactions between these two organizations.

NOAO and Gemini are both managed by the Association of Universities for Research in Astronomy (AURA). AURA is a consortium of universities, educational organizations, and other non-profit institutions that operates several astronomical observatories, termed "centers." AURA members consist of 34 US institutions and seven international affiliates. The mission of AURA is to act on behalf of the science communities that are served by these centers, and as trustees and advocates for the centers' missions. In addition to NOAO and Gemini, AURA also manages the National Solar Observatory and the Space Telescope Science Institute.

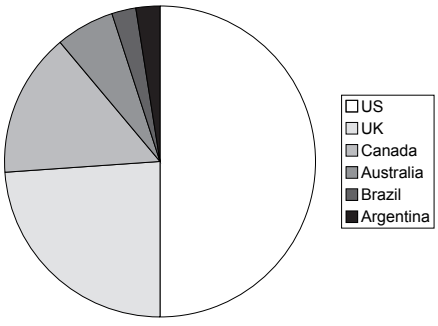
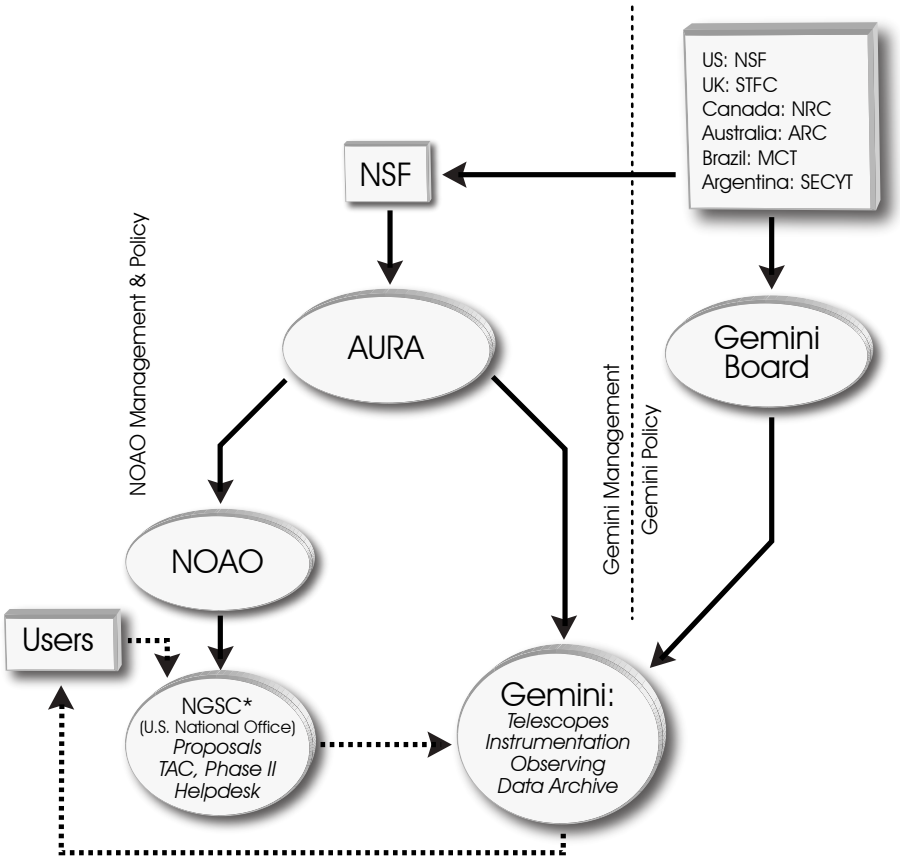



Figure 1: Relative financial contributions of the Gemini partners.




*Each partner country has a national office.

Figure 2: A simplified view of the management and policy structures of NOAO and Gemini.

Ground-based nighttime astronomy is represented within AURA by NOAO and Gemini. While NOAO is a US-controlled center, Gemini is an international partnership (consisting of the US, the UK, Canada, Australia, Brazil, and Argentina, with Chile and the University of Hawai'i having access as site hosts). The Gemini international partners fund the observatory through their various funding agencies, with the US National Science Foundation (NSF) acting as the executive agency. The relative financial contributions of the Gemini partners are illustrated in figure 1.

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*Governance Structures of NOAO & Intl. Gemini Observatory continued*

Figure 2 illustrates a simplified view of the organizational structure of both NOAO and Gemini. Looking first at NOAO, funding for the US national observatory flows from the NSF, with operations managed by the AURA Board of Directors. The AURA Board of Directors and the Observatories Council (OC) fall under the AURA oval on the chart. The OC is a management council appointed by the AURA Board that provides management oversight and advocacy for NOAO. The OC has the specific authority to act for the AURA Board in all matters pertaining to the mission of NOAO (except as specifically reserved for the AURA Board). The OC purview thus involves both management and science policy issues.

Focusing next on Gemini, AURA is the management arm of Gemini. However, science policy is set by the Gemini partnership as represented by the Gemini Board of Directors. Within AURA, the managing committee is the AURA Oversight Committee for Gemini (OC-G), which deals with management issues only and does not provide independent scientific direction to Gemini. Unlike NOAO, science policy for Gemini is not discussed within AURA (since Gemini is an international partnership), but rather is the purview of the Gemini Board.

Each Gemini partner country has a National Gemini Office (NGO). The NOAO Gemini Science Center (NGSC) is the US NGO. The NGOs are operations service providers and community science interfaces. NGSC deals with operational issues involving Gemini, such as answering questions, performing proposal technical reviews, and dealing with Phase II observing programs.

As shown in figure 2, NOAO/NGSC has no management authority over Gemini. NGSC provides input to Gemini through two international Gemini committees: the Gemini Science Committee (GSC) and the Operations Working Group (OpsWG). These two committees report to the Gemini director. GSC members are picked by the Gemini Director's Office, usually in consultation with some representative from the perspective member's partner country. Membership on the OpsWG consists of the heads of the partner NGOs.

Planning for the US role in Gemini into the next decade involves discussions not only within the US community but also within the partnership as a whole. The organizational structures and committee memberships are available on the AURA and Gemini Web sites:

AURA Board of Directors:
*www.aura-astronomy.org/g/ag.asp?gid=82*
Gemini Board:
*www.gemini.edu/science/#gbod*
AURA OC:
*www.aura-astronomy.org/g/ag.asp?gid=80*
AURA OC-G:
*www.aura-astronomy.org/g/ag.asp?gid=69*
GSC:
*www.gemini.edu/science/#gsc*
OpsWG:
*www.gemini.edu/science/#owg* NL

# Don't Miss NGSC at the 2009 AAS Meeting

*Kenneth H. Hinkle*

Were you at the January 2008 American Astronomical Society (AAS) meeting in Austin? Did you stop at the NOAO Gemini Science Center (NGSC) table at the NOAO booth? If you did, you know we had two raffles. An NOAO town hall meeting attendee won an iPod touch for entering the NOAO raffle. Matt Richter (University of California, Davis) won a $250 gift certificate for entering the NGSC raffle, which required filling in the NGSC questionnaire. The questionnaire allowed us to collect quite a bit of information about you, our users or potential users. We thank the more than 200 people who filled out our questionnaire. Additional information about the results of the survey and NGSC's presence in Austin is available at: *www.noao.edu/noao/noaonews/mar08/pdf/93ngsc.pdf* (p. 14) and *www.noao.edu/usgp/ngsc-aas-211.html*, respectively.

Look for NGSC at the NOAO booth in Long Beach in January 2009. We will have something amusing as well as informative! If you are a Gemini user, please take the time to stop and talk to us. We value your comments on your interactions with Gemini and NOAO/NGSC. Since most of you are queue observers, our interaction with you is mostly limited to email. The AAS meeting is one of the few chances we have to meet face to face.

NGSC staff member Dara Norman helps Marcel Agüeros (Columbia University) with his Phase II at the January 2008 AAS meeting.

And, of course, if you have been granted Gemini observing time in 2009A, NGSC staff present at the AAS meeting will help you with your Phase II observing program. This is an opportunity for you to get expert one-on-one help with the Phase II process.

# Community Input to the Gemini Long Range Plan

*Verne V. Smith*

In anticipation of operations into the next decade (2011–2020), the international Gemini Observatory has begun the process of drafting a Long Range Plan (LRP). This plan will provide overall direction for the observatory, making sure that near-term projects are consistent with reaching long range goals, as well as ask the question "what should Gemini look like in 2020?"

Input will cover such areas as engineering, administration, safety, outreach, development, and science operations. The timescale for this plan envisions a draft LRP in early 2011 that will define an optimal set of science goals for Gemini out to 2020.

Some of the parameters that need to be considered include:

- Science trends
- Gemini viewed in the context of other ground- and space-based observatories
- Technology frontiers
- Playing to Gemini's strengths within a global view of astronomy
- Long-term north/south instrument deployment plans
- Resource constraints
- Recommendations from various existing and soon-to-be completed national astronomy priority assessments, such as—for the US—the Access to Large Telescopes for Astronomical Instruction and Research (ALTAIR) committee report or the 2010 decadal survey

The time period covered by the LRP includes the planned deployment of the James Webb Space Telescope (JWST) and the possible beginning of operations of a ground-based Extremely Large Telescope (ELT) of the 20- to 30-meter class. Within this context, consideration could be given to some of Gemini's identified strengths, such as a well-developed queue-based system, excellent thermal infrared (IR) sensitivity, and superb image quality. These natural strengths must then be counterbalanced by other community aspirations, which include continued interest in broadly capable optical instruments for the Gemini partnership, wide-field multiplex capabilities, such as those provided by FLAMINGOS-2 or WFMOS, or high-dispersion optical and near-IR spectroscopy. All of these variables must be combined to develop an optimized set of capabilities for the future Gemini Observatory.

Broad community input into defining future Gemini capabilities is essential, and some of the questions that need to be addressed include:

- Which instruments should be on which telescope (should instruments move between north and south)?
- What new instrument capabilities are needed?
- Which instruments could be upgraded?
- What balance should be sought between community-defined workhorse and niche instruments?
- What balance should be sought between large survey science and principal-investigator-driven science?
- How might we prioritize visiting instruments?
- How much can we work to build inter-observatory collaborations, allowing some room to specialize telescopes?

Further thought will be needed on how to best gather input into the long-range planning for Gemini. However, one good route for the community to provide initial comments is through the membership of the US Gemini Science Committee (GSC).

The GSC members are listed below, along with their email addresses. These individuals welcome any and all comments from you concerning the Gemini LRP, so I encourage you to give the issues pointed out above some thought and to share these thoughts with your GSC members!

**US Members of the GSC:**

Nancy A. Levenson (University of Kentucky)
*levenson@pa.uky.edu*
Christopher C. Packham (University of Florida)
*packham@astro.ufl.edu*
Henry G. Roe (Lowell Observatory)
*hroe@lowell.edu*

**GSC Chair** (acting for the entire partnership)**:**

Timothy C. Beers (Michigan State University)
*beers@pa.msu.edu*

# Joint Gemini-Subaru Science Meeting in May 2009

*Timothy C. Beers (Michigan State University) & Verne V. Smith*


The Subaru and Gemini observatories will host a jointly sponsored science meeting at Kyoto University, in Kyoto, Japan, from 18–21 May 2009. This international conference will include scientific results from any projects undertaken using the Subaru and Gemini telescopes. The principal goal of the meeting is to bring together astronomers from the Subaru and Gemini communities to discuss and understand the science being done by both groups, with particular emphasis on mutual communication, collaborations, and synergies between the communities. This get-together will help to define new scientific frontiers, with an eye toward future users and observational capabilities of the Gemini and Subaru telescopes.

The Local and Scientific Organizing Committees (LOC and SOC, respectively) have been appointed. The LOC is chaired by Kouji Ohta (Kyoto University), while the SOC is co-chaired by Masashi Chiba (Tohoku University) and Timothy C. Beers (Michigan State University).

Additional members of the SOC are:

Toru Yamada (Tohoku University),
Motohide Tamura (NAOJ),
Kazuhiro Shimasaku (University of Tokyo),
Yoshiko Okamoto (Ibaraki University),
Kouji Ohta (Kyoto University),
Isobel Hook (Oxford University),
Chris Packham (University of Florida),
Scott Croom (Sydney University), and
Marcin Sawicki (St. Mary's University).

Subsequent to the joint science meeting, a Gemini users meeting will be held on 22 May 2009 at the same venue.

At the time of this writing, the details of registration, travel, and accommodations had not been announced; check the NGSC Web site (*www.noao.edu/usgp/*) for the latest news on "Kyoto 2009." The LOC is preparing a conference Web site where all necessary information will be available.

# Report on Classical Observing at Gemini South

*Pieter van Dokkum (Yale University) & Mariska Kriek (Princeton University)*

*NGSC encourages Gemini users to consider requesting classical time for observing blocks of one night or more. We have solicited comments from previous observers to highlight the advantages of classical observing. This commentary from Pieter van Dokkum describes his experience observing with the Gemini Near-Infrared Spectrograph (GNIRS) on Gemini South.—Kenneth H. Hinkle (NGSC)*

While it was on Gemini South, GNIRS was one of the best and most versatile faint-object, near-infrared spectrographs in existence. Its ability to obtain spectra over the entire wavelength range of 1–2.5 μm was particularly well-suited to our science program. Mariska Kriek and I measured redshifts of a complete sample of K-selected galaxies at $2.0 < z < 2.7$, using emission lines or (in about half the cases) the redshifted Balmer or 4000 Å continuum break. The GNIRS spectra formed the basis of Mariska Kriek's Ph.D. thesis (see Kriek et al. 2006, 2007, 2008). She is now a Russell Fellow at Princeton University.

Pieter van Dokkum and Mariska Kriek on the Gemini South observing floor underneath GNIRS.

Early on, we chose classical rather than queue mode for our program. We did not know beforehand what the galaxy spectra would show: for some galaxies, a 30-minute spectrum would show emission lines at a redshift outside of the $2.0 < z < 2.7$ window, which meant that we could move to another target; for other galaxies, we had to integrate several hours to obtain a redshift from the continuum emission. Mariska wrote software that allowed us to reduce the spectra immediately, so that we could make these real-time decisions and optimize our observing time.

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*Report on Classical Observing continued*

I also think that we greatly benefited from getting to know the instrument really well. For the first run, we actually went to the telescope a day early to sit in and help out during an engineering night. The detailed knowledge we gained over the course of several years helped us with developing both efficient observing strategies and optimal reduction techniques. Also, the Phase II forms of Gemini can be somewhat daunting, so it was very useful to have been to the telescope to see firsthand how the software, the telescope, and the instrument interact. We would like to think that this interaction was mutually beneficial: we could give instant feedback on operational issues, and we aided in the development of the acquisition script and some of the reduction tools.

Finally, there is a more subjective aspect to this. Going to the telescope and interacting with the people who make it all happen gives a sense of co-ownership and of a shared responsibility to ensure the success of the observatory. Although there are excellent scientific reasons for queue observing, I encourage astronomers with a long-term interest in Gemini to make the bumpy ride up Mauna Kea or Cerro Pachón at least once! NL

# An Update on GNIRS

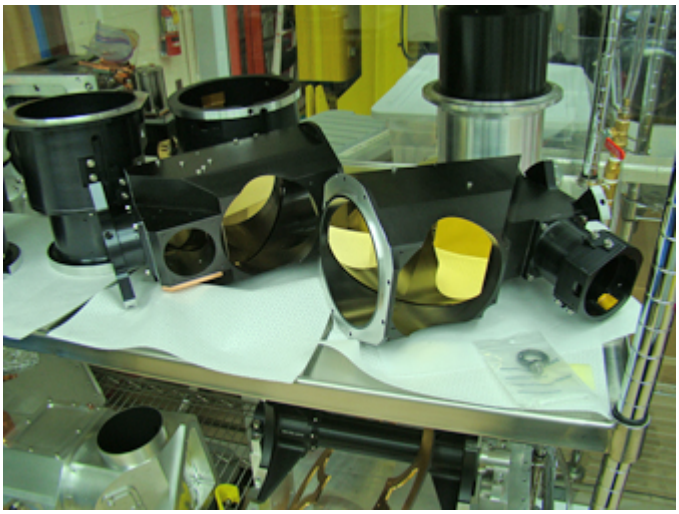
*Jay Elias & Katia Cunha*

As reported in the September 2007 *NOAO/NSO Newsletter*, the Gemini Near-Infrared Spectrometer (GNIRS) was seriously damaged when the instrument was accidentally overheated in April 2007. A number of optical and electrical components, including the detector, were either damaged or destroyed. The bulk of the recovery effort has been taking place at the Gemini facilities in Hilo.

GNIRS was built by NOAO, and the NOAO staff involved in the original design and construction work are being consulted on the repairs. Some NOAO support services are being used to evaluate optics and detectors, and to assist with final re-integration. Detailed progress reports on GNIRS can be found in the June 2008 and December 2007 issues of *Gemini Focus* (see *www.gemini.edu/sciops/instruments/nir/GemFocusMay08-GNIRS.pdf* and *www.gemini.edu/files/pio/newsletters/35-200712_gemini_focus.pdf* [pp. 43-45]).

GNIRS will be re-deployed at Gemini North, where it can be used with the Altair adaptive optics (AO) system and take advantage of the superior conditions for L- and M-band spectroscopy. Gemini's schedule calls for re-integration and lab testing to be completed during the first quarter of 2009.

If all goes as expected with the detector and optics procurements, GNIRS will be included in the 2009B Gemini call for proposals. GNIRS will be offered in seeing-limited modes previously used at Gemini South. GNIRS will not be offered for AO observations during 2009B because those modes will not have been commissioned yet. It is possible that science verification time will be offered in 2009B once GNIRS is commissioned with Altair.



GNIRS camera barrels during re-integration. The two short cameras are on the left, the two long cameras are on the right. The flats in the long cameras are among the optics that were damaged during the accident and replaced.

# NICI–AO Imaging Capability at Gemini South

*Kenneth H. Hinkle & Ron Probst*

The Near-Infrared Coronagraphic Imager (NICI) is an adaptive optics (AO) dual-channel camera with a coronagraph that is optimized to search for and image large Jovian-type planets around nearby stars. However, many people may not know that NICI can be used without the coronagraph.

In this mode, NICI becomes a natural guide star AO imager. The detector is a 1024 × 1024 ALADDIN InSb array with 18 mas/pixel yielding a field of view (FOV) of 18 × 18 arcseconds. A variety of broadband and narrowband filters are available including J, H, K, and Ks. The FOV and pixel scale are similar to those of the Hokupa'a/QUIRK system used at Gemini North until 2003. AO imaging is a new feature at Gemini South, and users interested in this capability should look for NICI in the 2009B call for proposals.

# Helpful Hint: Gemini Science Archive

One common question asked through the Gemini HelpDesk concerns the accessibility of the Gemini Science Archive. As the archive (*cadc.hia.nrc.ca/gemini*) is the primary distribution mechanism for Gemini data, lack of access can be frustrating. Occasionally, although the Web interface to the archive is accessible, the data may not be (and you may get errors from the download tool). Even the most robust archives have occasional downtime. If you are not able to access your data in the archive, please wait for a few hours and then try again to connect.

# NGSC Instrumentation Program Update

*Verne V. Smith & Mark Trueblood*

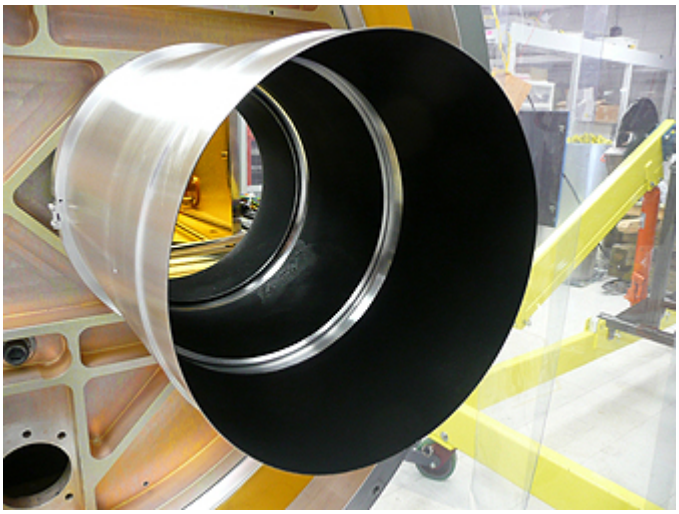
The NGSC Instrumentation Program continues its mission to provide innovative and capable instrumentation for the Gemini telescopes in support of frontline science programs. This article gives a status update on Gemini instrumentation being developed under the oversight of the NGSC, with progress since the September 2008 *NOAO/NSO Newsletter*.

**FLAMINGOS-2**

*The Florida Multi-Object Imaging Near-Infrared Grism Observational Spectrometer (FLAMINGOS-2) is a near-infrared multi-object spectrograph and imager for the Gemini South telescope. FLAMINGOS-2 will cover a 6.1-arcminute-diameter field at the standard Gemini f/16 focus in imaging mode, and will provide multi-object spectra over a 6.1 × 2-arcminute field. It will also provide a multi-object spectroscopic capability for Gemini South's multi-conjugate adaptive optics system. The University of Florida is building FLAMINGOS-2 under the leadership of Principal Investigator Steve Eikenberry.*

The Pre-ship Acceptance Test was held in Gainesville, FL, August 4–8. The Camera Dewar cold head failed shortly before the test was scheduled to begin. The decision was made to proceed with the test knowing that many sections of the test could not be performed with a warm Camera Dewar. Despite this impediment, approximately half the requirements were successfully tested and passed. Following the test, the Gemini Observatory produced a punch list of items to be completed before the instrument is shipped to Cerro Pachón. The University of Florida team responded promptly with a schedule showing completion of all items by the end of October 2008, with the resumption of the Pre-ship Acceptance Test occurring in November 2008. If this schedule is followed, the authors expect the instrument to be shipped to Gemini South by the end of the calendar year.

As of mid-October, the University of Florida team reported that 74 percent of the punch list work on FLAMINGOS-2 has been completed.



The Pre-ship Acceptance Test for FLAMINGOS-2 showed that a deployable light baffle was needed to shield thermal emission from the gate valve separating the multi-object spectrograph and camera units. The baffle extends through the open gate valve to connect baffling on both sides of the valve. The completed baffle assembly is shown.