

2003 NOAO Users Committee Report

The National Optical Astronomical Observatories (NOAO) Users Committee (“the Committee”) met in Tucson, Arizona on 2003 October 23, 24 to provide NOAO with feedback and advice on all aspects of NOAO operations that impact the NOAO facilities, services, and users. Committee members in attendance included, Timothy Beers (Michigan State University), Robin Ciardullo (Penn State University), Arlin Crotts (Columbia University), James Lowenthal (Smith College), Stephan Majewski (University of Virginia), David Turnshek (University of Pittsburgh), and Chair, Charles Woodward (University of Minnesota). This meeting of the Committee was the first in two years since the report issued in 2001.

The 2003 Committee charge was to focus principally on current short-term priorities and activities, including innovative steps to acquire new instrumentation for the Blanco and Mayall 4-m telescopes. The Committee also addressed broad topics of concern articulated by NOAO management and those raised by members of the user community. The Committee independently identified one area of particular concern, the pending Memorandum of Understanding (MOU) between the University of Maryland and NOAO.

The Committee’s consensus comments and recommendations in each area (12 Issues discussed in 16 pages) are addressed below.

[Issue 1]

The University of Maryland / NOAO MOU

NOAO is seeking innovative approaches to develop opportunities to procure new instrumentation over the next 5-years for the 4-m telescopes in an era of limited budgetary resources, an integrated observatory system philosophy within the United States astronomical community, and persistent under-instrumented 8-m class facilities. NOAO has identified instrument concepts (e.g., NEWFIRM) to pursue, which have been supported and endorsed by recommendations and actions contained in the 2000 Committee report. To facilitate timely procurement/delivery of NEWFIRM for the Mayall 4-m necessitated NOAO to seek community partnership to leverage resources. An announcement of opportunity (AO) was released to the community in the 2002 March NOAO newsletter detailing selection criteria and incentives for collaborations. Response to the AO within community was poor, with the University of Maryland being the sole respondent. NOAO and the University of Maryland are currently negotiating a MOU that, in part, guarantees Maryland access to 20% of the total available science time (approximately 160 nights per semester) on the Mayall 4-m time per annum.

Although the Committee accepted the rationale of the AO and the objective of providing the user community with new, fast-track instrumentation capabilities on a prime national community resource, we have serious reservations that NOAO, the Association of Universities for Research in Astronomy (AURA), and the National Science Foundation (NSF) should consider before finalization of the University of Maryland/NOAO MOU.

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The Committee was concerned that the estimated \$6000/night for Mayall 4-m telescope time is under-valued and does not represent an accurate rate of return from either the user community's scientific perspective or an operational point-of-view. Community oversubscription rates for 4-m access are strong indicating extremely competitive demand for the facility, while infrastructure maintenance, technical support, and adequate operational staffing continue to apply pressure to marginal NOAO budgetary resources.

One principle for maintaining a national observatory structure is to provide an institutional locus to aggregate a pool of skilled instrument builders, technical staff, management personnel, and scientists who provide leadership and service back to the broad United States astronomical community. The Committee recognizes the challenges that NOAO faces with regard to maintaining excellence in these areas of expertise as private large aperture facilities and independent astronomical institutional enterprises proliferate. The Committee's opinion remains that NOAO still retains substantial capability in instrumentation design and fabrication and software design infrastructure that is a community asset. Therefore, the Committee is puzzled as to why NOAO considers the "in-kind" development and delivery of software by the University of Maryland (as structured in the pending MOU) to be consistent with the objectives of satisfying selection criteria that "impacts on the development of partner instrumentation capabilities," or how "in-kind" software provides the NOAO user community with a tangible delivery item. The Committee also questions whether more groups in the astronomical community would have responded to the AO if it were widely known that NOAO deemed software as an acceptable "instrument" to leverage guaranteed 4-m time. The Committee does not endorse NOAO adopting such a model for future AOs at this juncture.

Pre-commitments of telescope time on NOAO large aperture facilities (two 4-m telescopes and 40% of WIYN time), exclusive of Gemini, currently constitute a 20% lien on the total available number of science nights. Many of these commitments are to support peer-reviewed (through the standard NOAO Time Allocation Committee [TAC] process) NOAO survey programs and ground-based NASA mission support. Although the wedge for these current programmatic pre-commitments is projected to decline in 2005 pre-commitments, combined with an additional 20% University of Maryland lien on Mayall 4-m time, significantly decrease the availability of openly competitive telescope time. The Committee is concerned with the erosion of accessibility.

NOAO and the United States astronomical community have developed a robust peer-review process for providing access to national ground-based astronomical resources for compelling science programs. Telescope scheduling of programs awarded time through the TAC process are a complex articulation of TAC rank, instrument block scheduling, object right ascension, phase of the moon, and director's discretion. The Committee's current understanding of the University of Maryland/NOAO MOU with regard to scheduling guaranteed nights is vague, and thus the impact on the user community's access unclear. However under any MOU, the Committee concurs that maximum flexibility must be preserved for the benefit of the general NOAO user community,

despite inconveniences imposed upon the University of Maryland as a result of such prioritization.

Recommendation 1.1:

The Committee strongly urges that a complete and careful review of \$6000 per night figure of merit be made and, if warranted, a more appropriate rate of exchange be established and used in any final MOU.

Recommendation 1.2:

The Committee recommends NOAO and the NSF examine the merits of requiring a “nuts and bolts” deliverable, where cost and value are readily understood, as opposed to a more ethereal “bits and bytes” approach where the benefits to the user community are difficult to quantify.

Recommendation 1.3:

The Committee unanimously recommends that any University of Maryland/NOAO MOU preserve, at a minimum, the current total uncommitted fraction of the available science time per semester.

Recommendation 1.4:

The Committee requests that NOAO clarify and articulate the model for implementing 4-m instrument and scheduling access under terms of the pending MOU. The Committee also requests additional information on how any potential Maryland arrangement would impact the NOAO TAC process and metrics of NOAO scientific productivity.

Recommendation 1.5:

The Committee recommends that NOAO maintain the NEWFIRM science advisory committee throughout the design, build, and commissioning phases of this instrument development project.

[Issue 2]

Desirable Instrument Evolution of the 4-m Telescopes During the Next 5-yr Horizon

The Committee endorses the principle behind NOAO’s new instrument procurement strategies for the 4-m telescopes – proactively teaming with partners in the national astronomical community. However, such a paradigm is new, and it is incumbent on NOAO to aggressively announce solicitations and court responses from the largest possible pool of potential respondents. In particular, the Committee is dissatisfied with how the announcement of opportunity to the community for the NEWFIRM partnership

was disseminated and how the process/outcomes were communicated to this Committee. We strongly suspect that notice was not received by many institutions that might have made potential bids. Such opportunities should be accompanied by the maximum degree of competition so that NOAO is in the position of choosing among several bidders for the best trade for its scarce telescope time.

The Committee strongly feels that sole-source, non-competitive selection processes are detrimental to procurement of the best instrumentation, at low risk and reasonable cost, especially when prime NOAO assets are used a collateral leverage in the exchange. The Committee recommends that NOAO management use a variety of alternative tools to ensure successful solicitations to announcement of opportunities, including notifying directly University and Institutional Research Offices, use of the American Astronomical Society News Bulletins, or publications and vehicles of AURA and the NSF to communicate to the broad community.

The Committee was also concerned that NOAO was moving too aggressively regarding solicitations of interest for telescope time on the Blanco 4-m in exchange for a wide-field CCD imager. The Committee reacted negatively to the sense that NOAO was responding to an initiative by a potential bidder without a widely announced opportunity. In addition, we concurred that the current schedule presented by NOAO management precludes the opportunity for competing teams to amass financial and technical resources to make a bid. We encourage NOAO to avoid pre-identifying preferred suppliers to avoid any appearance of improperly exercising the competitive peer-review process.

The Committee also has reservations about the motivation for this particular capability on the 4-m. Procurement arrangements that concern such a large portion of the 4-meter time available for trade should be initiated on the basis of scientific need recognized by the community. Scientific justification was not discussed to the satisfaction of the Committee.

Recommendation 2.1:

NOAO should make full use of the Users Committee to review and vet the science, operational, and structural impacts that any solicitation and subsequent MOUs may have on the users of NOAO facilities and services. Such interaction should occur early in the process. The Committee urges NOAO to respond to this high priority action.

Recommendation 2.2:

The Committee encourages NOAO to aggressively market all announcements of opportunity for partnering to the broadest community possible.

Recommendation 2.3:

NOAO should consider revisiting its plans and timelines for the acquisition of wide-field optical capability for the Blanco 4-m. The Committee asserts that instrumentation needs

must have a clear science case, be responsive to the need of the community, and be procured through a competitive process. There is not Committee consensus to fully endorse the current course of action.

[Issue 3]

The U.S. Gemini Support Model, as implemented by the Gemini Science Center

The Committee was generally pleased with the evolution of the Gemini support model and the National Gemini Science Center (NGSC). Here we emphasize some areas where improvements may still be possible. (1) The NGSC should continue to make strong efforts to alert the community to science opportunities with Gemini. (2) When preparing proposals users would benefit from having some type of web page guide (e.g., a pie chart) that would indicate the likelihood of obtaining data in queue mode as a function of observing conditions requested. (3) Although there is not a large back log of queue programs, the NGSC should evaluate the necessity of running programs to completion as this often has a significant impact on other highly rated programs (e.g., within the context of high [Band 1], medium [Band 2], and low priority programs is some percentage of completed observations, say 80% for [Band 1], sufficient?). (4) The NGSC should continue to evaluate the right balance of classical versus queue scheduled time, recognizing that classical time provides the opportunity for an observer to be more creative at the telescope (e.g., reassessing S/N requirements, priority switching based on new information, etc.). (5) Given that classical runs are generally of short duration, it would be useful to implement programs aimed at minimizing inefficiencies often experienced by new observers at the beginning of a run. For example, a program of education for US astronomers that involved “eavesdropping” at remote observing stations (e.g., at Tucson, Michigan State University, or University of North Carolina-Chapel Hill) might be useful. Another useful program might be mini-queue block scheduling of time for several approved programs.

Recommendation 3.1:

The Committee is pleased with the current status of the NGSC and encourages full NOAO support for this critical community resource.

Recommendation 3.2:

The Committee endorses the concept of classical observing at Gemini and encourages the NGSC to explore creative mechanisms to facilitate such opportunities.

Recommendation 3.3:

The Committee notes that modern technologies have made “eavesdropping” a practical and efficient way to conduct remote observing. The NGSC, in consultation with the

Gemini Observatory, should consider how best to provide this capability to the United States user community.

[Issue 4]

The CTIO/KPNO Facilities in the Context of the US System

The Committee assessed and evaluated the strengths and weakness of the CTIO and KPNO facilities supported by NOAO in the context of an integrated system of telescopes within the United States community. Particular attention was given to how NOAO and the system might evolve over the next 5-year time horizon, and how NOAO through current initiatives was establishing strategic positions to facilitate future, innovative science opportunities for users. Continual ability to provide a modest set of new instrumentation capabilities at “no-cost” through collaborations maintains the observatory’s competitive posture and provides NOAO users with potential benefits. The Committee also reacted positively to initiatives regarding other possible instrumentation developments at CTIO and KPNO not connected with trading of NOAO telescope time and suggests that NOAO keep the Committee informed of progress as warranted.

The Committee also identified potential weakness in the CTIO and KPNO facilities, especially in light of potential evolution of the ground-based system within the United States. In particular, the Committee agreed there are two areas of ground-based, optical astronomy currently under supported by NOAO. First, there is little NOAO activity in optical interferometry. Given the state of maturity of the field and its likely ratio of science output per investment of resources, this may be appropriate at present. Second, time-domain observations ("synoptic") are under supported at the larger telescopes. While there seems to be good accommodation for these programs on the SMARTS facilities, on the larger telescopes, paradoxically even Gemini with its queue program, scheduling makes the successful completion of an observational time sequence difficult. This is a domain in which unique science can be done with current NOAO telescopes and instrumentation. A study of how to further accommodate synoptic and/or time-domain critical programs, especially on Gemini, might easily be cost-effective in terms of innovative projects that might seek out NOAO telescopes.

Recommendation 4.1:

The Committee is receptive to, and largely endorses the proposed NOAO arrangement regarding the Penn State Exo-Planet Tracker on the 2.1-m telescope. However, the Committee believed that the number of 2.1-m guaranteed nights (49, or about 10% of available over 1.5 years) along with a 1-to-1 match with NOAO users might be excessive. The Committee advises NOAO to track subscription rates for this instrument and monitor scientific output.

Recommendation 4.2:

The Committee endorses continuing the current use arrangement for FLAMINGOS and encourages NOAO to reach agreement with the University of Florida on extending the MOU.

Recommendation 4.3:

The Committee suggests that NOAO consider studying how to facilitate synoptic observations and assess the future opportunities that optical interferometry may provide.

[Issue 5]

Importance of CTIO/KPNO Facilities in Their Present and Near-Term Roles

CTIO and KPNO continue to offer access to facilities unavailable to a large segment of the United States astronomical community. This includes telescopes from small aperture to 8-m class, and a range of optical/infrared instrumentation capabilities. Though there is an understandable shift of emphasis to Gemini, as well as to other large aperture telescopes outside of NOAO, the community still values access to smaller apertures, which fill important roles, for example, in synoptic science and survey follow-up. Indeed, with the growing pervasiveness of large imaging surveys at all wavelengths, the Committee notes that it is critical that NOAO position itself to fill the demand for follow-up capability. This includes long term strategies for accommodating time series/synoptic programs and maintaining an appropriate and modern suite of spectroscopic instrumentation, particularly on the 4-m and 8-m telescopes.

Clearly NOAO cannot be expected to do it all. The availability of new telescope/instrument capabilities through the TSIP program (see Issue 6) helps keep options for the user community broad and current. Beyond this, competitive niches for NOAO must be identified and exploited. The Large Synoptic Survey Telescope (LSST) facility development is an example of a future unique competitive niche that should be aggressively pursued. On the other hand, while NOAO's emphasis on 4-m wide field is scientifically sound, this capability should be considered in context of science priorities and other facilities. Other wide-field telescope/instruments combinations (e.g., VISTA, CFHT (+Megacam), DCT, UKIRT, or PANSTARRS) will erode the NOAO 4-m wide-field potential for innovative science.

The Committee asserts that present and anticipated oversubscription rates for instruments/facilities should be used as the metric to evaluate the success of future ventures, including possible partnerships involving 2-m and 4-m class telescopes, as well as assessing the viability of new and currently available instrumentation modes. Overall, evidence from the oversubscription rates show that KPNO and CTIO remain relevant, viable options for the user community. Moreover, it is clear that the community continues to place a high value on the 4-m class telescopes.

We believe that NOAO should strive to avoid substantial increases in the oversubscription rate. On the other hand, NOAO must interpret sharp and persistent drops in oversubscription as indicative of reduced community demand/interest that deserves remedial action. For example, the Committee views the NOAO participation in the SMARTS collaboration to be a success and a useful model for comparison. Here, while the NOAO share of the smaller aperture CTIO telescopes was substantially reduced through the SMARTS agreement, the actual oversubscription rate for these telescopes continues at about the same level because the heaviest consumers were subsumed within the SMARTS partnerships. In the same context, it is worthwhile to consider the disparity in the oversubscription rates of the NOAO share of Keck time (averaging 5:1) versus the rate for Gemini (averaging 2.6:1). This may reflect the newness of Gemini and small number statistics on available Keck time, but should this trend continue it would be an indicator that the community may value Keck and associated instrumentation more than Gemini and its available instruments --- a problem that would need to be addressed.

Recommendation 5.1:

The Committee recognizes the highly competitive scientific and instrument environment present in the astronomical community and urges NOAO to identify and pursue selected areas of expertise and commitment. Further, we suggest that NOAO review how 4-m wide field capability and proposed first light schedule provides a scientific advantage for our user community given competing activities within the system.

Recommendation 5.2:

The Committee recommends that NOAO continue to assess its strategic plans with the goal of maintaining healthy oversubscription rates for facilities and instrumentation. As this metric current stands, NOAO is vibrant and the Committee applauds NOAO management and staff diligence and efforts.

[Issue 6]

NOAO Managed System Access and the TSIP Program

NOAO is tasked with administration of telescope time given to the national community through the TSIP program. The Committee notes the positive benefit of this arrangement for the broad community (for instance providing potential access to optical spectroscopic capabilities on large aperture telescopes) and the central role of NOAO. However, the Committee is concerned that the burden of managing and fully supporting this access on behalf of the community may not be reflected in terms of adequate budgetary resources. NOAO's responsibilities will become increasingly diffuse as the TSIP program grows. Because TSIP relationships involve a diversity of site specific details, administrative overheads, as well as user support resources, too much diffusion may lead to substantial

strains on NOAO staff and reduce their effectiveness on behalf of the user community. Ultimately, the Committee worries that this will lead to diminished scientific return.

There are already some signs that the critical limit is near. There is a perception of ‘abandonment’ among some users of TSIP time on external telescopes after the proposal approval process. The community expects NOAO to serve as a facilitator and an advocate for the NOAO users when difficulties arise on these other facilities, rather than merely negotiating the initial allocation of telescope time. However, to manage and satisfy user expectation in this enlarged role requires NOAO staff familiar with each facility in the system.

To ask NOAO to increase its TSIP responsibilities in this way will require streamlining of activity. This may include such things as: (1) Ensuring, to the extent possible, a uniformity of relationship with each external facility. For example, a minimum requirement would seem to be on-line user manuals for each external telescope (+instrument) in the TSIP program that could be made available through NOAO. (2) Centralizing a website for the users of NOAO-allocated external telescope time including links to telescope preparation forms, manuals, and on-site support staff as well as the responsible NOAO contact staff for each TSIP relationship. (3) Processing, through NOAO support staff, a uniform run evaluation form to enable NOAO to be informed of observing program successes and failures. This will ensure that assessment of TSIP relationships is continuous and feedback is immediate. (4) Establishing block scheduling of NOAO-allocated time on each external telescope may ease the “negotiation” phase burdens. Users could be made aware of NOAO-available nights each semester before proposals are due.

Recommendation 6.1:

NOAO is encouraged to make periodic assessment of the real burdens of administering the external telescope time, and evaluate this burden against the demands of maintaining NOAO facilities. Such an assessment is imperative before NOAO considers extending TSIP or TSIP-like activities.

Recommendation 6.2:

The Committee urges NOAO to study and identify mechanisms that lead to effective advocacy and support for users on TSIP facilities.

Recommendation 6.3:

Unproductive or inefficient TSIP agreements should be abandoned. On the other hand, should further extensions be considered viable, the Committee recommends that such extensions be sought that have the potential to increase spectroscopic capabilities on large aperture telescopes. This area appears to be a continuing concern among the NOAO user community.

[Issue 7]

NOAO Support of Multi-wavelength, Multi-Mission Programs

The optical/infrared facilities of NOAO play an integral role in supporting highly oversubscribed multi-wavelength, multi-mission (e.g., NASA Space Infrared Telescope [SIRTF], Hubble Space Telescope [HST], CHANDRA observatory, or the Very Large Array [VLA], ALMA, etc.) observations. The Committee argues that special agreements with other NASA or radio facilities for “set aside” time need to be equitably reciprocal in nature. The Committee strongly advocates that under no circumstances should such agreements result in a reduction in generally available NOAO telescope time by more than 25%. Beyond this suggested cap, science programs can still compete for telescope time by use of an expanded and well argued case in the NOAO time allocation form “Use of Other Facilities” section. NOAO may consider modifying the charge to the TACs to instruct them to consider the merits of awarding additional telescope time to accommodate complementary NOAO data to augment other wavelength observations.

The Committee agrees that any NOAO data that are acquired under “set aside” arrangements should be given priority in archiving. These data should have similar proprietary periods as the space-based data they complement. In addition, NOAO should consider requirements for these data products leading to uniformity of calibration, observational modes, and formats.

Recommendation 7.1:

The Committee encourages NOAO to continue facilitation of multi-wavelength, multi-mission science programs. For supported programs, we recommend that NOAO establish guidelines and requirements that produce uniform data products. The Committee also recommends that users who are taking advantage of this process be required to take the data in the manner recommended by the Data Products Program for storage in a calibrated archive.

[Issue 8]

Effectiveness of Current Telescope Time Assignment Procedures

The general consensus of the Committee is that the current NOAO “one-stop” proposal process to the telescope system and the time assignment procedures are satisfactory.

The Committee discussed at length the need to consider how NOAO could acknowledge and support observers with established, grant-sponsored programs (exclusive of activities discussed in Issue 6). Concerns from the user community suggest that there is a need to remedy the occasional problem whereby science programs can be adjudicated worthy of financial support from granting agencies but be turned down for NOAO telescope time.

Since NOAO receives support from the NSF, this situation can be especially frustrating to investigators who have NSF support for their observing programs. While the Committee does not advocate abrogation of the NOAO TAC process, responsibilities and/or authority, in deference to merit outcomes arising from grant review panels (or vice versa), we do argue that NOAO should establish some uniform mechanism for investigators to indicate grant support (including agency) for the science described in their proposals. Such information may be useful for TAC deliberations and NOAO for outcomes assessment.

We suggest that the proposal forms should be modified to indicate the level of support that principal investigators (PIs) have to complete proposed programs. For example, the following might be answered: (1) Have PIs or Co-Investigators received a grant to provide support to achieve the overall science goals of the proposed program? (2) If yes, list the nature of this support. Then, it may be prudent for NOAO to instruct the TAC to take these facts into consideration when allocating telescope time. All other proposal merits being equal (i.e., when TAC grades for programs are essentially equivalent relative to the variance in individual grades), the Director may wish to consider using grant-support as a weight when actually assigning telescope time. If the United States wants to remain competitive it is important to recognize that both telescope time and funding must be simultaneously made available to accomplish forefront science. For example, it was troubling to hear that for some NOAO survey programs PIs were claiming that they did not have sufficient resources to reduce data and make it available as they had originally promised.

Recommendation 8.1:

The Committee recommends that NOAO modify current proposal call forms to include a short section and/or check box regarding grant support

Recommendation 8.2:

The Committee encourages NOAO to review metrics used to determine the potential allocation of telescope time and assess whether current strategies properly support the user community.

[Issue 9]

Operational Modes for the 4-m Class Telescopes and Their Scientific Return

The Committee believes that the need for 4-m apertures will continue for some time into the future, even in the age of 8-m telescopes. Objective measures of the telescopes' productivity (i.e., number of papers and number of citations) demonstrate that these telescopes are still among the most productive in the world.

The Committee applauds the NOAO's experiment with new operational modes for the Kitt Peak telescopes, and continues to support such programs, as long as pre-allocations of the 4-m telescopes remain less than 25%. The Committee also remains optimistic about the long-term scientific returns of the Large Surveys Program. However, the Committee is very disturbed that most of the survey teams are still having difficulty delivering their data products to the community. Because of this, the Committee endorses NOAO's decision to place a moratorium on the program. Future solicitations for survey proposals should make clear that investigators must make their data products available in a timely manner. The Committee suggests that this requirement be implemented by making telescope time assignments contingent upon the achievement of clearly stated production milestones.

The Committee recognizes the difficulties involved in operating 4-m telescopes under severe budget constraints. One possibility is to form operating partnerships with other institutions. However, such an option must be considered very carefully, since such partnerships will reduce community access, and (by reducing peer-review), decrease the efficiency of United States astronomy. Specifically, the Committee feels that any partnership that causes the (expected) telescope oversubscription rate to be greater than 3 is damaging to United States astronomy, and should be avoided. An alternative model to mitigate budgetary concerns involves running telescopes in the CheapOps mode.

Recommendation 9.1:

The Committee strongly endorses continued operation of the 4-m class telescopes of Kitt Peak and Cerro Tololo in their current modes.

Recommendation 9.2:

The Committee supports the decision to suspend survey solicitation and recommends that NOAO assess why current teams are having trouble delivering science quality data products to the community in a timely fashion and seek remedies to expedite delivery.

Recommendation 9.3:

The Committee does not support the CheapOps mode for the NOAO 4-m class telescopes. Unfortunately, given their age and complexity, the Committee believes that this model is not a feasible option for the 4-m telescopes.

[Issue 10]

Role and Priority of Nationally Support Telescopes with Apertures Less Than 3.5-m

Smaller telescopes (aperture < 3.5 meters) continue to play a useful and productive role in the national system and will do so for some time, perhaps beyond the next decade. They serve the following purposes: (1) Education for graduate and undergraduate

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students, (2) Wide-field optical/infrared imaging surveys with large detector mosaics; many of these will feed follow-up spectroscopic programs with WIYN and the 4-meter telescopes, (3) Synoptic photometric surveys of variable stars and supernovae, (4) Synoptic imaging surveys of near-earth asteroids, Kuiper belt objects, and other solar-system targets, (5) Bright targets, (6) Targets of Opportunity, and (7) Spectroscopic identification or follow-up.

However, the Committee recognizes that NOAO's first priority must be support of Gemini and development of the next generation of larger facilities, including the LSST and the Giant Segmented Mirror Telescope (GSMT), followed by WIYN, SOAR, and the 4-meter telescopes. Given the current constrained budgetary profiles, the Committee fully supports NOAO's pursuit of creative partnerships with interested institutions that can keep the smaller telescopes open and available to the national community for at least some fraction of the time. The CTIO SMARTS program, which includes the 0.9-m, 1.0-m, 1.3-m, and 1.5-m telescopes, is apparently a successful model that should be continued and expanded to the smaller KPNO telescopes as well.

The Committee recommends that NOAO's instrumentation and staff support of the small telescopes be focused on existing imaging facilities such as MOSAIC, so instrumentation development resources and FTE can be allocated exclusively to Gemini and other future large telescopes. For instance, The WIYN 0.9-m Consortium's use of the MOSAIC camera appears to be scientifically productive and not an undue burden on NOAO resources. However, institutions involved in public-private partnerships should be encouraged to provide their own instruments as long as NOAO staff support is not required.

The CheapOps mode of support by all accounts is working well at KPNO. However, this has necessitated two observers at the telescope for an observing run. In particular, some Committee members were concerned that running the 2.1-m without providing a telescope operator presents significant risk, and were surprised that no harm to the telescope or to observers had yet occurred. As long as the 2.1-m remains a public facility, the Committee urges NOAO to reconsider 2.1-m telescope operator support upon PI request. Alternatively, it may be beneficial to some users if NOAO provided a list of qualified observing assistants in the Tucson area who could be contacted and paid for their assistance on observing runs. The idea here is that this might be less expensive than two observers traveling to Arizona. A system like this appears to be available at CTIO via SMARTS.

Finally, we must echo the words of the 2001 Users Committee: "However difficult, the Committee wishes unequivocally to apprise the general user community that if NOAO resources are not incremented and/or augmented above the current FY2001 [now FY2003] levels, the only telescopes that NOAO will operate and support in the near future will be the 4-m to 8-m class facilities."

Recommendation 10.1:

The Committee endorses establishment of creative NOAO-private partnerships for operation and maintenance of NOAO telescopes of aperture less than 3.5-m.

Recommendation 10.2:

The Committee recommends a goal of at least 25% community access (as planned for 2004 in the SMARTS program) to ensure that NOAO's efforts on behalf of the observer community are worthwhile.

Recommendation 10.3:

The Committee recommends renewal of the NOAO and the WYIN Consortium MOU for MOSAIC, assuming the partners are all interested and that the arrangement continues to provide quality science opportunities of the community. NOAO should also pursue ODI.

Recommendation 10.4:

NOAO should consider providing a list of qualified observing assistants in the Tucson area who could be contacted and supported by a PI for their assistance at the 2.1-m. Alternatively, NOAO may wish to investigate the efficacy of providing limited telescope operator support upon a request basis for the 2.1-m and/or explore other creative remedies.

Recommendation 10.5:

The Committee was interested in hearing further details regarding possible access to a near-infrared imager through partnership with the Space Telescope Science Institute (StScI). We suggest that NOAO continue to explore this arrangement and report back to the Committee.

[Issue 11]

Data Products Program and the Changing Relationship to NOAO Facility Users

The Committee was pleased that the NOAO Data Products Program is actively pursuing a programmatic agenda to deliver robust archiving capability, pipeline reduction tools (especially for Gemini instruments), improvement and extension of the core IRAF software, data mining structures, and archives. Key to successful implementation of wide-field capability on the NOAO 4-m telescopes are pipeline reduction software, uniform calibration and data acquisition sequences, and data bases (wholly compatible with Virtual Observatory standards) that are accessible and can be efficiently mined by the general community. We note that delays in establishing archives have had a negative effect on the science impact and utilization of the NOAO Surveys Program by the general

user community. However, details of the Data Products Program implementation strategies, interfaces with the National Virtual Observatory, data visualization tools, and data storage and mining protocols were not well discussed. As a beta-data archive will open to the community in mid-2004, the Committee felt that some of the activities (including support and communication with archival astronomers) and outcome goals remain ill-defined.

Recommendation 11.1:

The Committee requests that the Data Products Program develop a strategic plan for activities during the next 5-year period detailing NOAO commitments and deliverables to the community. The Committee desires to have a presentation of such material by its next meeting.

Recommendation 11.2:

The Committee strongly supports efforts of the Data Products Program and its IRAF group to deliver software packages to support Gemini instrumentation.

Recommendation 11.3:

The Committee recommends close interaction between the NEWFIRM initiative and the Data Products Program to ensure that proper software and archiving architectures are extant prior to instrument commissioning.

Recommendation 11.4:

The Committee encourages NOAO through the Data Products Program to assist current survey teams in efforts to provide community accessible data products on an expedited schedule.

[Issue 12]

Meeting Materials and Report Dissemination

The Committee was pleased to receive the meeting materials prior to the meeting. This enabled us to identify key areas for discussion and those items that needed additional information and reports. The Committee also was enthusiastic that the NOAO Director has responded in written form, point-by-point, to the 2001 Committee report. This activity demonstrates to the Committee and the larger community that the advisory process is functioning effectively and that a written institutional history is being preserved.

Recommendation 12.1:

The Committee endorses the practice of placing meeting presentations and materials on the web for retrieval. We request that both the portable document format (*.pdf) and the original power point (*.ppt) presentations be provided for the Committee prior to meetings.

Recommendation 12.2:

The Committee requests that NOAO create a final meeting web archive containing all updates/modifications and new/additional presentations or documents discussed during Committee deliberations. The Committee requests that NOAO maintain this archive as a permanent record of committee activity.

Recommendation 12.3:

The Committee thanks the Director for the candid, written response to past recommendations and encourages generation of similar document for this and future meetings.

Recommendation 12.4

Appropriate contents of the 2003 NOAO Users Committee report should be posted and made accessible to the community on the NOAO website after review by NOAO management.

This report is submitted on behalf of the Committee by C. E. Woodward, 2003.Dec.08