



from  
the

# Director's Office

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## Changing Directions and NOAO's Plans

*Sidney Wolff*

NOAO has traditionally had a dual mission—We operate telescopes so that the user community can take data *today*, and we also develop new facilities so that we will continue to provide competitive facilities *tomorrow*. And we must do this for both daytime and nighttime astronomy. It is fair to say that there is no community consensus on what the balance among these activities should be. The challenge in setting priorities is compounded by the fact that all of the goals are good ones. It is still the case that 50 percent of observers do not have access through their home institutions to telescopes with apertures greater than 2 meters. Every time we reduce current services, some observers are disenfranchised; not only can they not obtain ground-based data, their ability to write competitive proposals for spacecraft observations in the absence of ground-based support may also be compromised. At the same time, those who say that the national observatories should concentrate on providing capabilities that are beyond the scope of what universities can offer, are setting an appropriate standard for NOAO. The complexity of the mission and of the organization of NOAO has an additional disadvantage. It is difficult for the community to be certain that the support and advocacy of NOAO will lead to support of those components of the program that they care most about.

We have decided that the best way to address the issue of the complex mission is to simplify NOAO. We plan to reorganize in order to streamline the interfaces to the diverse communities that we serve and also to allow us to focus better on changing the directions of the programs. As many of you already know, I am quite skeptical about

solving problems through reorganization. No structure is perfect, and there are only a finite number of ways to organize; so we move in a cycle, each modification correcting the excesses of the previous structure, until we complete the cycle and come back to where we started. NOAO was created 15 years ago by combining KPNO, CTIO, and NSO under common leadership; now we propose to move back to separate solar and nighttime programs, while retaining some of the advantages derived from sharing of personnel and achieving economies of scale, particularly in administrative and facilities support services.

We have, effective with the start of FY 2000, made NSO programmatically separate. Steve Keil now reports directly to AURA, has control over the NSO budget, and will prepare separate program and long range plans for NSO. His position within AURA is now exactly parallel to the position of the NOAO Director in terms of authority and responsibility. Further, the NOAO Director will no longer review any of the programmatic actions taken by the NSO Director. This autonomy for NSO means that advocacy for such initiatives as the Advanced Solar Telescope will be undertaken by the NSO Director and will not have to compete for advocacy with major nighttime initiatives.

I will propose to AURA that the nighttime program be renamed the National Optical Astronomy Observatory (note the singular). The programs of user support, instrument development, time allocation, etc. for CTIO, KPNO, and the US share of Gemini are so closely intertwined that we are already, in practice, operating a

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single observing system. Applications for observing time may request access to any subset of the components of this observing system in order to achieve the optimum strategy for carrying out a complex program.

Within the nighttime program, we must identify resources for several new tasks. The first is support of US users of the Gemini telescopes. NOAO is responsible for Gemini user support except for the time when observations are actually being taken. That means that we must have a good understanding of how to use the instruments so that we can advise users on how to prepare observing proposals and optimize their observing strategies. Planning observations with active telescopes requires more attention to such details as astrometry than is the case for conventional telescopes, and taking effective advantage of the opportunity for queue observations requires very accurate information about exposure times, S/N, etc. We have assigned two mirror scientists, who will be the primary contacts for the US community, to each instrument.

We are also obligated to provide the software for reducing data from the Gemini instruments. Several of the instruments, including the AO system and IFU spectrographs, provide capabilities for which NOAO staff have little previous experience in extracting quantitative information. Even if we rely on outside groups to develop the necessary software, we must still have a deep understanding of the procedures and their limitations in order to incorporate the necessary routines into IRAF.

Overall, we expect a quarter of the nighttime scientific staff, north and south combined, to be focusing on Gemini support. Since the staff size is not changing, this means that there will be

relatively less support for users of KPNO and CTIO. This change of emphasis is consistent with recommendations of the users committee, who have stated that support of Gemini should be given high priority and that NOAO staff should focus on doing what the users cannot do for themselves. Fortunately, the instruments at KPNO and CTIO should be relatively stable for the next couple of years, and they are fairly well documented.

A management plan for Gemini support is being developed by Todd Boroson, Bob Schommer, and Caty Pilachowski. In the spring, after the management plan is complete, we plan to transfer responsibility for US Gemini activities from Todd Boroson to Bob Schommer, who will remain at CTIO and who will be assisted by Caty Pilachowski in the north.

There are a number of new directions outlined in the NOAO long range plan (see the NOAO Web site for the plan prepared a year ago; a revision is in progress and will be available in March, 2000). This plan calls for developing the scientific case, defining the science requirements, and conducting the technology studies for the Next Big Telescope (aperture > 30 m).

Several workshops have already been sponsored by AURA, Gemini, and NOAO, and further work is in progress. We have worked with the Steward and Lowell Observatories to develop the scientific case and explore the technical feasibility of constructing a telescope that would be able to conduct an all-sky survey every few days. We are beginning to explore the issues that must be addressed in order to mine the growing number of astronomical databases. We are developing agreements that will make it possible to obtain coordinated ground and space data through a single observing application for programs that will provide rich and coherent data sets for community use.

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In order to explore the opportunities and issues associated with each of these initiatives, we have established a Planning and Development Office, under the leadership of Steve Strom. This office will be responsible for working with the community to define the tasks needed to launch each initiative; identify community capabilities and interests, since we see this work being carried out in partnership with institutions and scientists outside NOAO; and develop proposals for funding. We believe that we must find the resources to prepare proposals from within NOAO; obviously, however, we cannot support major programs like the construction of the NBT from within our current resource base.

NOAO recently announced that it would provide multi-year allocations of observing time for those groups who wished to conduct large-scale surveys that would lead to databases that could address a broad range of problems and that would be made available to the community after a minimal proprietary period. This opportunity was oversubscribed by about a factor of 5/1; five survey proposals were selected. While the groups themselves will be responsible for reducing and archiving the data, it is important to make sure that optimum observing and calibration strategies are adopted from the beginning of the surveys, that the capabilities and limitations of the existing NOAO pipelines are well understood, and that the data are actually made accessible in a timely fashion. Todd Boroson will be taking responsibility for overseeing the NOAO effort to support these surveys.

So where does all this leave us? Still with a complex program, balanced between current services and future investments. We are committed to continuing to operate the Blanco, SOAR, Mayall, and WIYN telescopes for the indefinite future, and the 2.1-m on KPNO for at least the next several years, particularly for wide-field IR imaging. NSO will operate both the McMath and Sac Peak facilities until they are replaced by the Advanced Solar Telescopes. We would

still like to see an imaging survey telescope for Chile, and a SOLIS network that spans the globe. We are trying to lay the groundwork for major telescope initiatives for both solar and nighttime astronomy—the Advanced Solar Telescope, a 30-m or larger telescope, and an ultra-wide-field survey telescope, along with advanced capabilities in data mining—with the relative priority and timing for these initiatives being guided by the decade survey, which is now in progress.

One of the pieces of advice I give people is that if it takes a compound sentence to sell an idea or program, then they need to try again. NOAO, unfortunately, takes multiple compound sentences, as the preceding paragraph demonstrates. Simplifying the program either would serve too narrow a range of the science or would not lead to the constant renewal of capabilities that the rapid developments in our field demand.

It is my view that the need for a national observatory will be even greater in the next decade than it was in the previous one. The kinds of questions we are beginning to ask in astronomy require both facilities and data sets that transcend what is likely to be achievable within the capabilities of a single university or research group. They also transcend what NOAO can achieve by itself. Much larger telescopes, all-sky surveys repeated every few nights, and sustained imaging of the solar surface at a resolution of 0.1" are all within reach; and breakthroughs in our understanding of problems ranging from the changing levels of solar activity to the evolution of galaxies require new facilities. Their successful construction will depend on the talents of *all* of the community. We see the national observatories in both solar and nighttime astronomy (now that there will be one of each) working in new forms of partnership with the community to realize the ambitious goals laid out in NOAO's long range plan.

## NOAO Preprint Series

The following preprints were submitted during the period 15 August 1999 to 15 November 1999. Please direct all requests for copies of preprints to the NOAO author marked.

- 852 \*Méndez, R.A., Paltais, I., Girard, T.M., Kozhurina-Platais, V., van Altena, W.F., "*A Large Local Rotational Speed for the Galaxy Found from Proper-Motions: Implications for the Mass of the Milky-Way*"
- 853 \*Sakai, S., Mould, J.R., Hughes, S.M.G., Huchra, J.P., Macri, L.M., Kennicutt, R.C., HST HoKey Project, "*The Hubble Space Telescope Key Project on the Extragalactic Distance Scale XXIV: The Calibration of Tully-Fisher Relations and the Value of the Hubble Constant*"
- 854 \*Méndez, R.A., Minniti, D., "*Faint Blue Objects on the Hubble Deep Field North & South as Possible Nearby Old Halo White Dwarfs*"
- 855 \*Méndez, R.A., Paltais, I., Girard, T.M., Kozhurina-Platais, V., van Altena, W.F., "*Galactic Kinematics Towards the South Galactic Pole. First Results from the Yale-San Juan Southern Proper-Motion Program*"
- 856 Corbin, M.R., \*Smith, P.S., "*Long-Term Spectroscopic Monitoring of Low-Redshift Quasars. I. Five-Year Report*"
- 857 \*Massey, P., "*An Unprecedented Change in the Spectrum of S Doradus: As Cool As It Gets*"
- 858 DaCosta, G.S., \*Armandroff, T.E., Caldwell, N., Seitzer, P., "*The Dwarf Spheroidal Companions to M31: WFPC2 Observations of Andromeda II*"
- 859 Julian, W.H., \*Samarasinha, N.H., Belton, M.J.S., "*Thermal Structure of Cometary Active Regions: Comet 1P/Halley*"
- 860 \*Komm, R.W., Howe, R., Hill, F., "*Solar-Cycle Changes in GONG P-Mode Widths and Amplitudes 1995-98*"

## Other NOAO Papers

Preprints that were not included in the NOAO preprint series but are available from staff members are listed below.

Cole, A.A., Tolstoy, E., Gallagher, J.S., Hoessel, J.G., The WFPCZ IDT, \*Saha, A., "*Stellar Populations at the Center of IC 1613*"

Dickinson, M., Hanley, C., Elston, R., Eisenhardt, P.R., Stanford, S.A., Adelberger, K.L., Shapley, A., Steidel, C.C., Papovich, C., Szalay, A.S., Bershady, M.A., Conselice, C.J., Ferguson, H.C., Fruchter, A.S., "*The Unusual Infrared Object HDF-N J123656.3+621322*"

Matthews, L.D., Gallagher, J.S., van Driel, W., "*The Extraordinary 'Superthin' Spiral Galaxy UGC 7321. I. Disk Color Gradients and Global Properties from Multiwavelength Observations*"

Perlman, E.S., Madejski, G., Stocke, J.T., \*Rector, T.A., "*X-Ray Spectral Variability of PKS 2005-489 During the Spectacular November 1998 Flare*"

Walborn, N.R., Drissen, L., Parker, J.W., \*Saha, A., MacKenty, J.W., White, R.L., "*HST/FOS Spatially Resolved Spectral Classification of Compact OB Groups in the LMC*"