

# CTIO OPERATIONS

CERRO TOLOLO INTER-AMERICAN OBSERVATORY

## News from the Director

*Malcolm Smith*

### “NOAO South”

CTIO is continuing the rapid changes envisaged in NOAO's response to the latest decadal review of astronomy and astrophysics. In particular, the scientific staff have begun the process of migration to some of the new areas it emphasized. Those of you familiar with the scientific staff at CTIO will become accustomed to seeing their names mentioned in other parts of this *Newsletter* in association with a wide variety of instruments and projects besides just those of CTIO and SOAR, from the US Gemini Program (most recently supporting Phoenix on Gemini South) and GSMT (see Brooke Gregory's article in the June issue), to Major Instrumentation (bidding for the Gemini South Adaptive Optics Imager), LSST, and Data Products. Thus, about a year ago, we began to refer to ourselves as “NOAO South” in recognition that our staff is working much more closely now with our partners in Tucson and in support of US Gemini activity in Chile and on Hawaii. The work of a staff member in Chile now covers a much wider range of activities than it did a few years ago.

### Webcams—Live Pictures Day and Night from Chile

The reader can now access images from a series of external cameras installed on Cerro Tololo and Cerro Pachón. Some of these are still being worked on and so looking at these sites should be treated very much the way we approach “shared risk” observing. Sometimes the cameras are down when they are taken out of service for upgrades and to fix known bugs. Nevertheless, you may enjoy just checking things out from time to time:

- [www.soartlescope.edu](http://www.soartlescope.edu) gives an external view of the SOAR dome on Cerro Pachón. The dome is now weathertight and rotates remarkably quietly.
- Fish-eye lenses have been installed on the daytime and nighttime cameras on Cerro Tololo. Go to [www.ctio.noao.edu/new](http://www.ctio.noao.edu/new), click on “Sky Conditions” and then select “Webcam” for the day view (you normally see nothing at night with this camera) or select “TASCA” (Tololo All-Sky Camera) for a variety of nighttime options. TASCA saturates in moonlight and, of course, in daytime. Remember to allow for time zone differences in selecting the camera you want to use.
- As you will see over the next months and years, the TASCA camera ([www.ctio.noao.edu/sitetests/WorkShop2002/schwarz\\_jul02\\_tasca.ppt](http://www.ctio.noao.edu/sitetests/WorkShop2002/schwarz_jul02_tasca.ppt)) is expected to play an important role in all kinds of monitoring experiments, from clouds to moving objects to light pollution. Surf around for more details, and enjoy.

Other exciting news from CTIO is that the integration of the Infrared Side Port Imager (ISPI) for the Blanco 4-meter telescope is approaching readiness for commissioning at the telescope in late September (see the Probst et al., article on page 30 in this *Newsletter*).

## The Future of the Small Telescopes at CTIO

*Malcolm Smith & Alistair Walker*

There are six small telescopes at CTIO: the 1.5-meter, 1.3-meter (ex-2MASS), 1.0-meter (Yale), 0.9-meter, 0.6/0.9-meter Schmidt (Michigan), and the 0.6-meter (Lowell). The Schmidt and the Lowell telescopes are now operated only by their owners. The Yale 1.0-meter telescope is operated in queue-scheduled mode by the YALO consortium, of which NOAO is a member, while the 2MASS 1.3-meter telescope, without instrument, has been handed over to CTIO.

Earlier discussions about the future of these telescopes involved moving CCD imaging to the 1.3-meter telescope and moving the YALO operation from the 1.0-meter to the 1.5-meter in 2003. Since then we became rather more ambitious, and decided to seek a consortium to run several of the small telescopes. Such a consortium would be made up of institutions with both a strong scientific interest in the telescopes and the ability to pursue this interest instrumentally and operationally. Under NSF rules,

such a change has to be competed, so an Announcement of Opportunity for Operating the CTIO Small Telescopes was issued earlier this year. Two groups indicated an intention to propose to operate the telescopes. One was the SMARTS (Small and Medium Aperture Research Telescope System) group led by Charles Bailyn at Yale University, the other was a national consortium from Brazil. Shortly before the 30 June 2002 deadline for receipt

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*Small Telescopes at CTIO continued*

of the actual proposals, the groups decided to merge and submit a single proposal.

This proposal dealt with the operation of four telescopes (1.5-meter, 1.3-meter, 1.0-meter, and 0.9-meter), building on the experiences of the YALO consortium in operating the 1.0-meter (see the recent article on page 20 of the December 2001 *Newsletter*). The proposal includes provision of new instrumentation and some telescope upgrades (e.g., replacement of the 0.9-meter TCS). There is no doubt that the strong scientific benefits inherent in such an approach would give new life to these facilities.

The announcement of opportunity stipulated that NOAO will participate at the ~25% level, retaining access for NOAO users to at least CCD imaging over moderate fields, and access to some to-be-determined share of other instruments provided by the operating consortium. It's very likely that some telescopes will be scheduled for large projects more than others, so this will be an average figure for the system. Some members of the new SMARTS consortium (which now includes

Brazil) already use much of the small telescope time for large projects, and we believe that by retaining or enhancing the core capabilities of small-telescope imaging at a ~25% level, NOAO users will be well served.

A small committee was set up (external to NOAO) to review the proposal against a series of specific criteria mentioned in the announcement of opportunity. The committee strongly endorsed the scientific vision contained in the proposal, but was concerned about the financial viability of the project. The proposed management structure and lack of an educational and public outreach component were also criticized. Given the last-minute amalgamation of the two proposals, the committee recommended that the deficiencies be remedied and the proposal be resubmitted. The consortium accepted these recommendations and intends to resubmit, perhaps as soon as August 2002.

At the time of writing however, the detailed implementation of consortium operation of the small telescopes is still being discussed, and thus, telescope

and instrument combinations available for NOAO users in 2003A are not yet finalized. Prospective users should consult [www.noao.edu/naoaprop/help/facilities.html](http://www.noao.edu/naoaprop/help/facilities.html) before submitting a proposal. This site will be updated approximately one month before proposal deadline.

As guidance, at minimum the 1.5-meter with Cassegrain spectrograph and an imaging capability will be offered; the latter will be either (a) the 0.9-meter and CFCCD with the usual SITE 2K CCD, or (b) a new 4K imager on the 1.0-meter with 0.3 arcsec pixels.

The consortium is also planning to offer Andicam on the 1.3-meter. Although in consortium operation the nominal overall participation of NOAO is 25%, the amount of time available on any given telescope may be more or less.

In the above scenario, we anticipate that substantial amounts of 1.5-meter telescope time would be available for NOAO users in 2003A.

## ISPI Approaches First Light

*Ron Probst, Nicole van der Blik, Andres Montane, Ramon Galvez, Michael Warner, & Roberto Tighe*

The laboratory integration of the Infrared Side Port Imager (ISPI) for the Blanco 4-meter telescope is well under way. On-telescope commissioning is scheduled for September.

The figure shows the optical subassemblies undergoing a warm bench alignment check. An artificial star in the telescope focal plane (right) is being reimaged through the collimator and camera assemblies onto a 2K x 2K bare infrared multiplexer at the detector focus (left). Our build-to-print design philosophy has proven out; system alignment is within specifications with no adjustments necessary. In addition to the focus-to-focus image quality check shown, geometrical alignment and wavefront quality

have been verified using a laser, a point source and shear-plate interferometer, and a commercial Shack-Hartmann test system (Wavescope™). At the time of this writing we have installed the optics and an engineering-grade array in the dewar for the initial system cold checks.

We have received our science-grade Hawaii 2 array from Rockwell Scientific and have performed initial warm and cold tests. These benefited from our prior extensive exploration of array operating parameters with an engineering-grade array. The well depth (of the order of 100,000) and dark current (0.6 electrons per second at 83K) at 1-volt bias are very good for the imaging application of ISPI. However, there is a fairly large number of hot pixels

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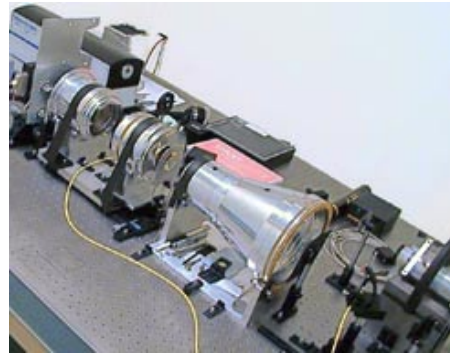


### *ISPI First Light continued*

that vary with bias. The optimal trade between hot-pixel cosmetics and well depth remains to be defined.

For updates on ISPI, please check the ISPI Web pages at [www.ctio.noao.edu/instruments/ir\\_instruments/ispi](http://www.ctio.noao.edu/instruments/ir_instruments/ispi).

Proposals for scientific use of ISPI are being solicited for the February–July 2003 observing semester. Instrument contacts are [probst@noao.edu](mailto:probst@noao.edu) and [nvdbliek@ctio.noao.edu](mailto:nvdbliek@ctio.noao.edu).



*Optical subassemblies of ISPI undergoing a warm bench alignment check.*

## Hydra-CTIO Update

*Knut Olsen*

Thanks to continued maintenance and repair work, the overall performance of the Hydra-CTIO multi-object spectrograph remains high (see the March issue of the *Newsletter*). We are concerned, however, by uncertain data suggesting a spatial distortion across the Hydra field with an amplitude of a few tenths of arcseconds. Monitoring of astrometric fields and the comparison of fluxes measured in Hydra spectra to fluxes obtained from CCD photometry both suggest distortion, but no systematic patterns are obvious. If present, the distortion could significantly affect faint-object spectroscopy. Users who have available CCD photometry and fluxes measured from Hydra spectra are encouraged to get in touch with Knut Olsen ([kolsen@ctio.noao.edu](mailto:kolsen@ctio.noao.edu)) and Nick Suntzeff ([nsuntzeff@ctio.noao.edu](mailto:nsuntzeff@ctio.noao.edu)).

## Other Happenings at CTIO

Anil Seth, a second-year graduate student of the Astronomy Department at the University of Washington, recently concluded a month-long stay at CTIO and looks forward to returning soon. Seth, Bryan Miller (Gemini South), and Knut Olsen (CTIO) are studying the properties of star clusters in low-mass dwarf galaxies, with the aim of measuring and understanding the galaxies' star formation modes. Seth's stay in Chile, which was made possible by NOAO, was both invaluable to the progress of the project and an enriching experience for all involved. US graduate students interested in collaborative research with CTIO scientific staff are welcome to peruse the observatory's Web pages, particularly the listings of scientific staff research interests at [www.ctio.noao.edu/pers/staff.html](http://www.ctio.noao.edu/pers/staff.html).

The CTIO Director's Office sent the President of Chile a photograph of himself and his delegation on Cerro Tololo beside the presidential helicopter on the occasion of the dedication of Gemini South. President Lagos took the trouble to write back to say thanks and to acknowledge the importance of this project for Chile. See [www.ctio.noao.edu/diroff/lagos.html](http://www.ctio.noao.edu/diroff/lagos.html) for a copy of his letter (in Spanish) and the photograph of the group taken by Elaine Mac-Auliffe.

### **Stellar Candles For the Extragalactic Distance Scale**

An international workshop will be held at the Universidad de Concepcion, Chile, on 9–11 December 2002 to explore the current viability of a variety of stellar standard candles used to set up the distance scale, including Cepheids, RR Lyraes, blue supergiants, supernovae Ia, novae, planetary nebulae, and globular clusters. There will be 16 invited review talks, and astronomers are encouraged to present contributed papers and poster papers at the meeting.

For more information, please check the conference Web site at [cluster.cfm.udec.cl](http://cluster.cfm.udec.cl).