NATIONAL OPTICAL ASTRONOMY OBSERVATORY

Quarterly Report (3) FY 2001

April 1 – June 30, 2001

Photo courtesy of Gemini Observatory.

Submitted to the National Science Foundation
Under Cooperative Agreement No. 9613615
September 7, 2001

NOAO is operated by the Association of Universities for Research in Astronomy under cooperative agreement with the National Science Foundation

National Optical Astronomy Observatory
Quarterly Report (3) FY 2001
April 1 – June 30, 2001

This report consists of summary statistics and other data on NOAO observing programs, publications, telescope usage, personnel changes, and visiting scientists for the fiscal quarter ending June 30, 2001. Quarterly highlights for the Educational Outreach and Public Outreach programs, as well as for observatory activities, are also described here. The appendices contain a comprehensive list of all PI's and collaborators, program titles, telescopes used, and observing hours associated with this quarter's observing programs.

Scientific highlights and current updates on NOAO initiatives, new capabilities, instrumentation, and operational activities will be published in the upcoming *NOAO Newsletter*, No. 67, September 2001.

TABLE OF CONTENTS

OBSERVATORY ACTIVITIES

A GNIRS quarterly review was held 13 June 2001 to evaluate progress on mechanical design, mechanical fabrication, electronics design, electronics fabrication, software, and procurement; a positive report was delivered (see *http://www.noao.edu/ets/gnirs*).

The AURA annual general meeting of member representatives was held in Tucson in April. A reception was held for outgoing NOAO Director, Sidney Wolff.

Adriana Peñafiel, the mayor of La Serena, Chile; Pedro Sanhueza, the director of OPCC (Office for Protection of the Quality of the Skies); Enrique Piraíno, an engineer from the University of Valparaíso who is an expert in lighting; and Malcolm Smith, director of CTIO, visited Tucson in April. The group met with Jeremy Mould, Richard Green, who has worked on lighting control issues in the Tucson area, and Doug Isbell of NOAO. The Mayor also met with City and County officials to discuss light pollution control issues, as both Tucson and La Serena have a desert climate and host numerous astronomical facilities. In addition, the delegation was welcomed by the International Dark-Sky Association, which presented Enrique Piraíno with an award for his lighting design of the Cross of the Third Millennium and Pedro Sanhueza with an award in recognition of the management of the design. This design preserves the nighttime environment, which is especially sensitive near CTIO.

The NOAO Users' Committee met in May. Their report is available on the Web at *http://www.noao.edu/dir/usercom/*.

NOAO's display at the Pasadena meeting of the AAS in June featured two of the decadal survey projects in which NOAO is playing a key role, the Large-aperture Synoptic Survey Telescope and the Giant Segmented-Mirror Telescope. Details on the GSMT are available on the AURA Web site at *http://www.aura-nio.noao.edu/*.

A special session titled "First Science Results from the Gemini North Telescope" was held on 4 June 2001 at the 198th meeting of the American Astronomical Society in Pasadena. This well-attended event was organized by Catherine Pilachowski, Deputy US Gemini Project Scientist; moderated by Jeremy Mould, NOAO Director; and supported by a poster in the main NOAO meeting exhibit which highlighted three new Gemini images, and by a related NOAO-issued press release "Early Gemini North Results Feature Super Star Clusters, Details of Circumstellar Disks" (see *http://www.noao.edu/news*).

OBSERVING PROGRAMS

Fifty-three observing programs were carried out at CTIO this quarter; six of these were thesis programs. At KPNO, total observing programs numbered 49, of which six were thesis programs.

CTIO Observing Programs by Type (US vs Foreign)

Three Months Ending	*6/01*	*% Total*
Programs (US)	41	77%
Programs (non-US)	6	11%
Thesis (US)	5	9%
Thesis (non-US)	1	2%
Total Programs	**53**	**100%**

KPNO Observing Programs by Type (US vs Foreign)

Three Months Ending	*6/01*	*% Total*
Programs (US)	41	84%
Programs (non-US)	2	4%
Thesis (US)	6	12%
Thesis (non-US)	0	0%
Total Programs	**49**	**100%**

Comprehensive lists of all PI's, Co-I's, and collaborators, as well as program titles, telescopes used, and observing hours associated with this quarter's observing programs are attached here as Appendices A and B for CTIO and KPNO, respectively.

PI's, Co-I's, and program titles for US science observing programs at the International Gemini Observatory are listed in Appendix C. Those for the HET and MMT, which are Public Access observing programs that were established through the support of the National Science Foundation, are also included in Appendix C.

Data showing total proposal requests by telescope and over-subscription rates are published in the *NOAO Newsletter*.

PUBLICATIONS

Publications Lists on the Web

KPNO Publications Lists for FY 1990 through FY 2000 and CTIO Publications Lists for FY 1995 through FY 2000 are now available on the Web at *www.noao.edu/noao/library/noaopubs.html*.

The KPNO and CTIO bibliographies track publications by fiscal year (Oct. 1–Sept. 30). Each file currently gives the total number of publications in the list. For KPNO, this number is separated into refereed and non-refereed totals and for FY 2000 also includes journal links.

Publications Based on Research Using NOAO Facilities

The tables below report the number of publications received by NOAO libraries during the first six months of FY 2001.

SUMMARY
Cerro Tololo Inter-American Observatory
Scientific Staff and Visitor Publications
(6 months ending 3/31/00)

Papers authored by:	# Papers	% Total
Visiting and/or CTIO scientists using specified CTIO telescopes*	**62**	**78%**
Visiting and/or CTIO scientists using non-specified CTIO telescope	4	5%
CTIO scientist using non-NOAO telescopes	14	18%
CTIO staff theoretical, engineering, CCS, or technical papers	0	0%
Total CTIO Publications (6 mos)	**80**	**100%**

DETAIL
No. of Publications Based on Data from CTIO Telescopes
(Total Papers Specifying CTIO Telescopes = 62)

Telescope Specified	# Papers**	% Total (62)
4-m	32	52%
1.5-m	15	24%
1.0-m	5	8%
0.9-m	16	26%
Curtis Schmidt	4	6%

Definitions:

 # Papers**** — *Paper cites this telescope as a source of data. (May mention additional CTIO telescopes and/or non-CTIO telescopes.) Since more than one telescope may be cited as source of data in a single paper,number of telescopes mentioned may exceed total of publications.*

***Publications Using NOAO Telescopes*:** — *Paper cites at least one NOAO telescope as source of data. (May mention additional NOAO telescopes and/or non-NOAO telescopes.) Author is non-NOAO visiting scientist or an NOAO scientist or both in collaboration.*

SUMMARY
Kitt Peak National Observatory
Scientific Staff and Visitor Publications
(6 months ending 3/31/00)

Papers authored by:	# Papers	% Total
Visiting and/or KPNO scientists using specified KPNO telescopes*	**72**	**66%**
Visiting and/or KPNO scientists using non-specified KPNO telescope	1	**1%**
KPNO scientist using non-NOAO telescopes	14	**13%**
KPNO staff theoretical, engineering, CCS, or technical papers	22	**20%**
Total KPNO Publications (6 mos)	**109**	**100%**

DETAIL
No. of Publications Based on Data from KPNO Telescopes
(Total Papers Specifying KPNO Telescopes = 72)

Telescope Specified	# Papers**	% Total (72)
4-m	26	36%
WIYN	12	17%
2.1-m	16	22%
Coude Feed	6	8%
0.9-m	17	24%
Burrell-Schmidt	4	6%
1.3-m	2	3%

Definitions:

 # Papers**** — *Paper cites this telescope as a source of data. (May mention additional KPNO telescopes and/or non-KPNO telescopes.) Since papers using data from multiple telescopes are counted more than once, total of this column will exceed absolute total of publications using KPNO telescope data.*

Publications Using NOAO Telescopes: — *Paper cites at least one NOAO telescope as source of data. (May mention additional NOAO telescopes and/or non-NOAO telescopes.) Author is non-NOAO visiting scientist or an NOAO scientist or both in collaboration.*

TELESCOPE USAGE AND PERFORMANCE DATA

Cerro Tololo Inter-American Observatory (CTIO)

In the quarter ending 30 June 2001, the observing programs of Principal Investigators accounted for 67% of available telescope hours; 7% of CTIO telescope time was used by NOAO scientific staff observers. Slightly more than 5% of available telescope hours was allocated to scheduled maintenance (including instrument tests, engineering, and equipment changes).

Total "downtime" for CTIO telescopes (hours lost to weather and equipment problems) was about 21%—of this, 20% was lost to bad weather and only 0.9% to equipment problems.

CTIO Telescopes
% Distribution of Telescope Hours
(Scheduled vs. Downtime)
April - June 2001

		% Hrs. Used By:		*% Hrs. Lost To:*		*% Hrs. To:*
Telescope	*Hours Available*	PI's	Staff	Weather	Equipment	Scheduled Maintenance
4-m	*1122.3*	71.4%	4.2%	16.0%	0.7%	7.6%
1.5-m	*1080.4*	60.4%	9.3%	22.7%	2.1%	5.5%
0.9-m	*1069*	70.9%	5.8%	19.4%	0.0%	3.9%
0.6-m/0.9m*	*304*	58.8%	13.9%	27.3%	0.0%	0.0%
All Telescopes	*3575.7*	66.9%	7.0%	20.0%	0.9%	5.2%

*Use restricted to dark of the moon.

Kitt Peak National Observatory (KPNO)

In the quarter ending 30 June 2001, 54% of total available telescope hours at KPNO went to the observing programs of Principal Investigators; 11% were devoted to those of NOAO scientists. Scheduled maintenance (including instrument tests, engineering, and equipment changes) accounted for 6% of total telescope hours.

Total "downtime" (hours lost to weather and equipment problems) for KPNO telescopes was 29%. Almost all these lost observing hours were due to bad weather (22%), with less than 7% lost to equipment problems.

KPNO Telescopes
% Distribution of Telescope Hours
(Scheduled vs. Downtime)
April - June 2001

Telescope*	*Hours Available*	*% Hrs. Used By:* PI's	Staff	*% Hrs. Lost To:* Weather	Equipment	*% Hrs. To:* Scheduled Maintenance
4-m	*822*	57.1%	7.5%	22.1%	5.8%	7.4%
WIYN	*246*	62.2%	3.3%	27.2%	7.3%	0.0%
2.1-m	*832*	49.4%	16.2%	20.6%	7.3%	6.5%
All Telescopes	*1900*	54.4%	10.8%	22.1%	6.7%	6.1%

* After an externally reviewed competitive proposal process, operations of the 0.9-m telescope were transferred to the WIYN Consortium on February 1, 2001. At that time, the telescope was closed for refurbishment, and is scheduled for resumption of science operations in September 2001. KPNO users have access to 40% of the scheduled CCD Mosaic imager time through KPNO's loan of the instrument to WIYN when it's not scheduled on the 4-meter.

As of February 1, 2001, the Coudé Feed telescope was closed to general user access. It is used for observation occasionally by special arrangement.

PUBLIC OUTREACH

Public Outreach manages all activities at the Kitt Peak Visitor Center, including the Center's retail operations and educational exhibits, the Kitt Peak Docent program, daily tours of Kitt Peak facilities, and the increasingly popular fee-based nighttime observing programs for the general public. Public Outreach also coordinates all media and filming requests involving Kitt Peak facilities and personnel.

Major efforts are underway to improve the appearance of the Kitt Peak Visitor Center, both externally and internally. This quarter the following projects were started:

- The replacement of the patio in front of the Visitor Center for both aesthetic and safety reasons. This project is in the process of going out to bid and should be completed in October of this year.
- A comprehensive plan is being developed for the interior of the Visitor Center. This plan will address lighting concerns, the addition of more interactive exhibits, aesthetic improvements, and an overall themed approach to exhibits.

Kitt Peak Visitor Center
Summary of Visitors
April - June 2001

Group/Program	*No. of Visitors*
General public tours	4,570
School groups K-12	304
Special tours	197
Nightly Observing Program	1,229
Advanced Observing Program	53
Total Visitors	**6,417**

- A number of the Visitor Center's backlit posters have been replaced to reflect up-to-date information or replaced due to fading.

A related marketing push began this quarter to increase the number of visitors coming to Kitt Peak, and has already led to a noticeable increase in mountain guests. Elements of this effort include a newly redesigned Kitt Peak brochure, which has been distributed by a more aggressive service that reaches all of Southern Arizona and the region's airports; better-coordinated Web information with sites such as the Tucson Metropolitan Convention and Visitors Bureau, the Southern Arizona Attractions Alliance, and the Arizona Office of Tourism; and a new informal visitor survey to help identify the demographics of guests visiting Kitt Peak.

To further increase its visibility and attractiveness with Tucson visitors, NOAO has also joined the following organizations as an active participant: the Southern Arizona Attractions Alliance, the Tucson Association of Museums, the National Association for Interpretation, and the Association of Science-Technology Centers, Inc.

The Kitt Peak Visitor Center docent program is being redesigned, including an extended eight-week training session for new docents that covers a wider range of topic areas (including customer service), more effective recruitment advertising, requirements for docents to pass written and oral tests, docent exchange field trips with other local attractions, and more frequent follow-up docent enrichment lectures by experts in the field.

Twenty astronomy students and their instructor from Columbia University's Biosphere received a special tour of Kitt Peak, including the McMath-Pierce solar telescope, the 2.1-meter telescope, the WIYN telescope, and the Mayall 4-meter telescope.

Kitt Peak's Advanced Observing Program continues to generate attention far beyond its regular nightly public outreach. Three images from the Visitor Center telescope were featured in the June issue of *Sky & Telescope* magazine.

EDUCATIONAL OUTREACH

NOAO received word that our proposal to NSF/EHR to build a community of Teacher Leaders and design an online course continuing the principles of Research-Based Science Education has been funded for up to five years. First-year funds have arrived, and 10 participants were selected for the first TLRBSE summer institute, scheduled for July 9-20.

In Project ASTRO news:

- The Project ASTRO Web pages on the NOAO server were completely redone, including significant steps beyond offering information about the program to providing classroom resources, such as Quicktime movie demonstrations of lunar-related Project ASTRO activities, including phases of the Moon and crater formation.
- Educational Outreach Coordinator Connie Walker made a presentation at the Project ASTRO Site Leaders Meeting in Boston.
- 250 copies of the latest ASTROgram quarterly newsletter were distributed, including application materials for the Fall 2001 workshop.
- NOAO Director Jeremy Mould signed an MOU with the Astronomical Society of the Pacific continuing NOAO's status as expansion site for Project ASTRO for another year.

NOAO educational outreach poster papers were presented at the June 2001 AAS meeting in Pasadena on Project ASTRO–Tucson and "Teacher Leaders in Research-Based Science Education, TLRBSE." Travis Rector participated in the special session on "Outstanding Programs in Education and Public Outreach."

Suzanne Jacoby and Connie Walker contributed to a NASA Broker/Facilitator proposal submitted by the University of Arizona's Flandrau Science Center to support a Southwest regional facility.

Connie Walker demonstrated "How to Make a Comet" at the UA ACCESS program, a science summer camp for visual- and hearing-impaired students.

Travis Rector and Connie Walker presented sessions at Pima Community College's Desert Vista Campus, a summer program on "Astronomy Appreciation 101" for at-risk high school students. Presentation topics were "The Expanding Universe" and "Careers in Science & Technology."

Media

After many months of preparation and testing, the new-look NOAO home page debuted in early April to positive reviews. The page includes a new primary link to NOAO-related information about high-priority projects in the most recent decadal survey, titled "Developing The Future." The colorful astronomical image that serves as the primary point of attraction on the entry Web page has already been updated four times.

Images taken by NOAO staff member Travis Rector were used as crucial context information for two Hubble Heritage Program press releases during this period: the April 2001 release of M51 and the May 2001 release of the Horsehead nebula. Many websites used the Horsehead image in particular, with credit to NOAO and NSF.

NOAO public affairs took the lead on developing an obituary and related materials for the passing of infrared astronomy pioneer Dr. Fred Gillett. This release generated very strong news coverage, including the May 2, 2001, obituary section of the New York Times, Wired.com, Space.com, and both local Tucson newspapers.

A variety of new materials and products were produced for the June 2001 AAS meeting in Pasadena, CA, including a colorful press release in support of a special session on early results from Gemini North, a new exhibit display sidebar highlighting the Gemini session (with images), and new handout postcards of NOAO images of the Moon and the Horsehead nebula. NOAO Director Jeremy Mould also held a roundtable discussion with the media on the future of the national observatory.

A new editorial team took over responsibility for production of the *NOAO Newsletter*, adding several new features while still shortening its overall length.

Media visits to Kitt Peak National Observatory during this period included a live broadcast by the weatherperson at local Tucson ABC-TV, who recommended Kitt Peak as an interesting outdoor activity for area residents and visitors; two members of the National Film Board of Canada researching a documentary about light and the Universe; and, a New York correspondent for European Television interviewed Kitt Peak Director Richard Green about light pollution and its effect on ground-based astronomy. A reporter for the local NBC-TV station also interviewed NOAO Director Jeremy Mould for a pending feature story on southern Arizona's role in space exploration.

Seventeen images were added to the image gallery during this quarter. NOAO images were featured nine times as the Web's "Astronomy Picture of the Day."

Server Hits
April - June 2001

NOAO-Tucson Total Outreach, Images, and Educational Outreach Server Hits	1,011,936
Total NOAO-Tucson server hits	2,578,723

Science and Information Requests

Educational Outreach
Summary of Science and Information Requests
April - June 2001

Type/Origin of Request	*Number*
"Explore Your Universe" brochures mailed	230
Requests/inquiries about astronomy/science (telephone, letter, e-mail, and walk-ins)	2,218
Requests/inquiries re NOAO images **	200
Total	**6,666**

**Does not include images downloaded from the NOAO Image Gallery.

PERSONNEL, VISITOR, AND OTHER DATA

Personnel Changes And Visiting Scientists

Hired

Date	Name	Position	Division/Unit
04/04/01	Jeremy Mould	Acting Director, NOAO	NOAO
04/16/01	Rich Fedele	Public Information Manager	EO/PO
06/01/01	Dara Norman	NSF Fellow Research Associate	CTIO
06/04/01	Patricia Knezek	Assistant Scientist	WIYN
06/18/01	Michele De La Pena	Sr. Scientific Programmer	CCS
06/18/01	Richard Shaw	Scientist	CCS

Changed Status

02/23/01	Buell Jannuzi	Tenure granted	NOAO
04/01/01	Rodrigo Alvarez	Electronic Tech. 2	CTIO
04/01/01	Ramon Galvez	Senior Engineer	CTIO
04/01/01	Esteban Parkes	Engineer	CTIO
04/01/01	David Rojas	Engineer	CTIO
06/01/01	German Schumacher	Sr. Engineer Manager	CTIO-SOAR

Leave without Salary (transferred from CTIO)

04/01/01	Stephen Heathcote	Associate Astronomer/Tenure	CTIO to SOAR
06/01/01	German Schumacher	Sr. Engineer Manager	CTIO to SOAR

Visiting Scientists (one month or longer)

12/01/99	Fernando Santoro	FAPESP, Brazil	CTIO
05/01/01	Sandrine Thomas	Ecole Sup.D'Optique	CTIO
05/22/01	Maximilian Strizinger	University of Arizona	CTIO
05/29/01	Themis Athanassiadou	Yale University	CTIO
05/29/01	Ben Johnson	UCLA	CTIO

Chilean Economic Data

Month Ending	4/01	5/01	6/01
CPI Change	0.5%	0.4%	0.1%
Cum. Change in CPI FY 2001	2.1%	2.5%	2.6%
Avg. Mo. Peso/Dollar Rate	592.91	599.89	610.53
Monthly Dollars Changed	$680,000	$560,000	$730,000

NSF Foreign Travel Fund

Quarter Ending	Amount	Foreign Institution Visited
6/30/01	$1,435.66	UKIRT (United Kingdom Infra-Red Telescope), Hawaii

APPENDIX A. OBSERVING PROGRAMS—CTIO

January – March 2001: The 53 scientific programs, including six thesis programs listed below, were carried out at CTIO during this quarter. Students are indicated by a (T) for thesis students, (G) for non-thesis graduate students, and (U) for undergraduate students. The telescope used and nights assigned (hours worked) are specified. Service Observing programs are denoted by S.O. instead of nights assigned.

US/Foreign Thesis Programs (6)

P. Green, B. Wilkes, J. Silverman (T) (Harvard Smithsonian Center for Astrophysics), C. Foltz (University of Arizona), J. Baldwin, A. Kindt (T) (Michigan State University), B. Jannuzi (National Optical Astronomy Observatory), C. Smith (Cerro Tololo Inter-American Observatory): *"Optical Followup of Serendipitous Chandra Sources."* 1(5)4-m

S. Hameed (T), R. Walterbos (New Mexico State University), D. Thilker (National Radio Astronomy Observatory), N. Devereux (Embry-Riddle Aeronautical University): *"HII Region Luminosity Functions of Spiral Galaxies."* 6(53)1.5-m

M. Reed (T), S. Kawaler (Iowa State University), D. Kilkenny (South African Astronomical Observatory, South Africa), K. Olivera, A. Kanaan (Universidade Federal do Rio de Janeiro, Brazil): *"Identifying Pulsation Modes in a Pulsating Subdwarf B Star."* 11(115)1.5-m

M.T. Ruiz, P. Rojo (T), M. Wishnjewski (Universidad de Chile): *"The Halo White Dwarfs' Siblings."* 4(17.5)4-m, 5(53.5)1.5-m, 6(72)0.9-m

C. Sneden, I. Ivans (G) (University of Texas, Austin), K. Kinemuchi (T), H. Smith (Michigan State University), B. Pritzl, G. Jacoby (National Optical Astronomy Observatory), A. Sweigart (NASA/Goddard Space Flight Center), M. Catelan (University of Virginia), A. Layden (Bowling Green State University), S. Baird (Benedictine College): *"Metal Abundances and Mixing in Metal-Rich Globular Clusters with Blue Horizontal Branches."* 3(27)4-m

L. Strolger (T) (University of Michigan), C. Smith, N. Suntzeff, P. Candia (Cerro Tololo Inter-American Observatory): *"Late-Time Deep Imaging of Supernova Host Galaxies."* 3(32)1.5-m

US/Foreign Investigator Programs (47)

F. Barrientos, P. Hall, L. Infante (Pontificia Universidad Católica de Chile), H. Yee, M. Gladders (G) (University of Toronto, Canada), E. Ellingson (University of Colorado): *"A Wide-Field High-Redshift Galaxy Cluster Survey."* 2(13)4-m

D. Bennett, S. Rhie (University of Notre Dame), C. Han, Y.-H. Park (G), C. Lee (G) (Chungbuk National University, Korea), B.-G. Park (Korea Astronomy Observatory, Korea), P. Meintjes (University of the Orange Free State, South Africa), K. Cook (Lawrence Livermore National Laboratory), D. Minniti (Pontificia Universidad Católica de Chile): *"Microlensing Planet Search Observations."* 9(110)0.9-m

P. Candia (Cerro Tololo Inter-American Observatory), R. Mennickent (Universidad de Concepción, Chile): *"UBVRI Photometry of V342 Ch."* 1(11)0.9-m

R. Cavallo (Lawrence Livermore National Laboratory), N. Suntzeff (Cerro Tololo Inter-American Observatory), C. Pilachowski (National Optical Astronomy Observatory): *"Aluminum Abundances in the Globular Cluster M80: Testing the Role of Deep Mixing in Red Giant Stars."* 2(21)4-m

S. Demers, B. Letarte (G) (Université de Montréal, Canada), P. Battinelli (Osservatorio Astronomico di Roma, Italy): *"C Star Survey of Local Group Dwarf Galaxies: The Outer Disc and Halo of NGC 3109."* 3(34)1.5-m

C. d'Orgeville, M. Chun (Gemini Observatory), C. Dainty, N. Wooder, J. Quartel, D. Michaille (Imperial College, UK), B. Gregory, M. Boccas (Cerro Tololo Inter-American Observatory): *"Mesospheric Sodium Layer Monitoring for Laser Guide Star Adaptive Optics Systems in Chile."* 10(62)0.9-m, 10(62)CS

P. Edmonds (Harvard-Smithsonian Center for Astrophysics), S. Frandsen, F. Grundahl, H. Kjeldsen, B. Bruntt (Aarhus University), T. Bedding (University of Sydney, Australia), E. Michel (Paris Observatory, France): *"Chasing Solar-Like Oscillations in Globular Cluster Red Giants."* 7(63)1.5-m

N. Evans, P. Harvey (University of Texas, Austin), L. Allen, P. Myers (Harvard-Smithsonian Center for Astrophysics), G. Blake, A. Sargent (California Institute of Technology), D. Koerner, P. Allen (G) (University of Pennsylvania), L. Mundy (University of Maryland), D. Padgett (Space Infrared Telescope Facility), K. Stapelfeldt (Jet Propulsion Laboratory), E. van Dishoeck (Leiden University, The Netherlands), E. Jensen, R. Whitacker (U) (Swarthmore College): *"From Molecular Cores to Planets."* 3(36)4-m

J. Frogel, P. Eskridge (Ohio State University), L. Echavarría (G), C. Burg (G), R. Windhorst, V. Taylor (G) (Arizona State University): *"U-Band Imaging of Bright Nearby Spiral Galaxies."* 10(104)0.9-m

D. Geisler, W. Gieren, J. Arenas, J. Seguel (G), R. Muñoz (G) (Universidad de Concepción, Chile), V. Smith (University of Texas, El Paso), S. Majewski (University of Virginia): *"Photometric Followup of Space Interferometry Mission Grid Giant Star Candidates."* 2(23)0.9-m

J. Gizis (California Institute of Technology): *"Search for Very Young Brown Dwarf Members in the TW Hya Association."* 4(50.5)4-m

M. Gregg (University of California, Davis), M. West, T. Miyake (U) (University of Hawaii): *"Galaxy Destruction and Recycling in Centaurus."* S.O.(25)4-m

J. Grindlay, P. Edmonds, J. McClintock, P. Zhao, M. García, P. Green, B. Wilkes, J. Drake, V. Kashyap (Harvard-Smithsonian Center for Astrophysics), A. Cool (San Francisco State University), S. Wachter, D. Hoard (Cerro Tololo Inter-American Observatory), C. Bailyn (Yale University), H. Cohn (Indiana University): *"ChaMPlane: Measuring the Faint X-Ray Binary and Stellar X-Ray Content of the Galaxy."* 5(32)4-m

P. Hall (Pontificia Universidad Católica de Chile): *"Determining the Fraction of Dust-Reddened Quasars Using 2MASS."* 2(10)1.5-m

T. Henry, W.-C. Jao (G) (Georgia State University), C. Anguita, M.T. Ruiz, L. González, E. Costa (Universidad de Chile), P. Ianna, M. Begam, R. Pujals, J. Subasavage (University of Virginia), R. Méndez (European Southern Observatory, Chile), P. Seitzer (University of Michigan), A. Miranda, R. Leiton (Cerro Tololo Inter-American Observatory): *"In Search of Nearby Stars: A Parallax Program at CTIO."* 8(58)1.5-m, 12(98)0.9-m

D. Hoard, S. Wachter (Cerro Tololo Inter-American Observatory), B. Johnson (G) (Columbia University), T, Athanassiadou (U) (Yale University): *"The "Invisible" Optical Counterparts of Radio Pulsars: Isolated Neutron Stars."* 1(4)4-m

J. Huchra, J. Mader (Harvard-Smithsonian Center For Astrophysics), S. Schneider, M. Skrutskie (University of Massachusetts), T. Jarrett, T. Chester, R. Cutri (California Institute of Technology): *"The 2MASS Redshift Survey."* 7(75)1.5-m

M. Hudson (University of Victoria, Canada), J. Lucey, R. Davies (University of Durham, UK), D. Schade (Dominion Astrophysical Observatory, Canada), R. Smith (Pontificia Universidad Católica de Chile), N. Suntzeff (Cerro Tololo Inter-American Observatory), G. Wegner (Dartmouth College): *"A Fundamental Plane Peculiar Velocity Survey of Rich Clusters within 200 h^{-1} Mpc."* 4(51)4-m

E. Jensen, R. Whitacker (U), A. Dullighan (Swarthmore College), D. Koerner, P. Allen (G) (University of Pennsylvania), B. Biller (Harvard-Smithsonian Center for Astrophysics): *"Searching for the Nearest Young Stars."* 1(11.5)4-m

R. Kennicutt (University of Arizona), J. Funes (Vatican Observatory), S. Sakai (University of California, Los Angeles): *"Star Formation in the Local Universe."* 7(75)0.9-m

A. Landolt (Louisiana State University): *"UBVRI Photoelectric Photometric Sequences."* 6(24.5)1.5-m

J.-W. Lee (G), B. Carney (University of North Carolina): *"The Oosterhoff Dichotomy as a Signature of Different Halo Formation Histories."* 3(35.5)4-m

S. Majewski, R. Patterson, J. Crane, P. Frinchaboy (G)(University of Virginia), W. Kunkel (Las Campanas Observatory, Chile), K. Johnston (Wesleyan University), D. Geisler, W. Gieren (Universidad de Concepción, Chile), A. Kundu (Yale University), N. Reid (University of Pennsylvania), F. Benedict (University of Texas, Austin): *"Spectroscopic Survey of the Grid Giant Star Survey."* 5(59.8)4-m

G. Mallen-Ornelas, D. Minniti, B. Sabogal (G), J. García (G) (Pontificia Universidad Católica de Chile), S. Seager (Institute for Advanced Study), H. Yee, M. Gladders (G) (University of Toronto, Canada), T. Brown, D. Charbonneau (G) (High Altitude Observatory): *"A Deep Search for Transits of Extrasolar Giant Planets."* 5(52)4-m

R. Marzke (San Francisco State University), P. McCarthy, H.-W. Chen, E. Persson (Carnegie Observatories), R. Carlberg (University of Toronto, Canada): *"The Las Campanas Infrared Survey: Evolved Galaxies at $1 < z < 2$."* 3(31)4-m

M. Mateo, R. Dohm-Palmer (University of Michigan), H. Morrison (Case Western Reserve University), E. Olszewski, P. Harding (G) (University of Arizona), K. Freeman, J. Norris (Australian National University, Australia), C. Sneden (University of Texas, Austin), A. Helmi (Max-Planck Institute, Germany), J. Arabadjis (Massachusetts Institute of Technology): *"Searching for Substructure in the Galactic Halo - The Imaging Survey."* 4(45)4-m

G. Meurer, D. Hanish (G) (Johns Hopkins University), H. Ferguson, P. Knezek, S. Oey (Space Telescope Science Institute), R. Webster, M. Drinkwater, V. Kilborn (University of Melbourne, Australia), R. Kennicutt (University of Arizona), C. Smith, R. Leiton, C. Aguilera (Cerro Tololo Inter-American Observatory), K. Freeman, M. Putman (Australian National University, Australia), L. Staveley-Smith (Australia Telescope National Facility, Australia): *"Star Formation in HI Selected Galaxies."* 6(30.5)1.5-m, 2(24)CS

R. Millis, M. Buie, L. Wasserman (Lowell Observatory), M. Wagner (Ohio State University), J. Elliot, S. Kern (G) (Massachusetts Institute of Technology): *"Discovery of Faint Kuiper Belt Objects with the MOSAIC Cameras."* 4(40)4-m

H. Morrison (Case Western Reserve University), J. Arabadjis (Massachusetts Institute of Technology), M. Mateo, R. Dohm-Palmer (University of Michigan), K. Freeman, J. Norris (Australian National University, Australia), E. Olszewski, P. Harding (G) (University of Arizona), C. Sneden (University of Texas, Austin), A. Helmi (Max-Planck-Institute, Germany): *"The Formation of the Outer Halo and the Mass of the Galaxy."* 4(35.5)4-m

D. Norman (Cerro Tololo Inter-American Observatory): *"A Redshift Search for the Lensing Cluster Near the QSO PKS1508-05."* 2(26)1.5-m

P. Nugent, G. Aldering, S. Perlmutter, R. Knop, A. Howell, A. Conley (G) (University of California, Berkeley), M. Phillips (Las Campanas Observatory, Chile), A. Riess, R. Gibbons (Space Telescope Science Institute), P. Candia (Cerro Tololo Inter-American Observatory): *"Metallicity Effects in the Spectra and Light Curves of Nearby Type Ia Supernovae."* 3(23.5)1.5-m, 2(23)0.9-m

S. Perlmutter, G. Aldering, R. Knop, P. Nugent, A. Conley (G), S. Deustua, D. Kasen, M. Wood-Vasey, D. Groom (University of California, Berkeley), A. Goobar (Stockholm University, Sweden), P. Astier (University of Paris, France), R. Gibbons (Space Telescope Science Institute): *"Cosmology with High-Redshift Type Ia Supernovae."* 3(37)4-m

R. Peterson (University of California, Santa Cruz), D. Terndrup (Ohio State University), E. Green (University of Arizona), A. Walker (Cerro Tololo Inter-American Observatory), E. Sadler (University of Sydney, Australia): *"Blue Horizontal Branch Stars in the Galactic Bulge."* 3(34.5)4-m, 6(48)CS

R. Peterson, R. Kraft (University of California, Santa Cruz), E. Green (University of Arizona), R. Rood (University of Virginia), D. Crocker (University of Alabama): *"Blue Horizontal Branch Stars in the Globular Clusters NGC 6752 and ω Cen."* 2(26)4-m

C. Reed (Alma College): *"UBV Imaging of Galactic Plane Luminous Stars."* 5(36)0.9-m

R. Samec (Bob Jones University), D. Hube (University of Alberta, Canada), D. Faulkner (University of South Carolina): *"Photometric Detection of Solar Type Binary Systems with Impacting Gas Streams."* 8(72)0.9-m

S. Seager (Institute for Advanced Study), G. Mallen-Ornelas, D. Minniti, B. Sabogal (G), J. García (G) (Pontificia Universidad Católica de Chile), T. Brown, D. Charbonneau (G) (High Altitude Observatory), H. Yee, M. Gladders (G) (University of Toronto, Canada): *"A Deep Search for Transits of Extrasolar Giant Planets."* 6(58)4-m

J.A. Smith (University of Michigan), D. Tucker (Fermi National Accelerator Laboratory): *"Southern Standard Stars for the u′g′r′i′z′ System."* 8(82)0.9-m

D. Soderblom (Space Telescope Science Institute), J. King (University of Nevada at Las Vegas), T. Henry (Georgia State University): *"Completion of a Large Survey of Activity in Nearby G Dwarfs."* 6(63.5)1.5-m

N. Suntzeff (Cerro Tololo Inter-American Observatory), M. Hamuy (G) (University of Arizona), B. Schmidt (The Australian National University, Australia): *"Red Spectrophotometry of Landolt Photometric Standards."* 2(16.5)4-m

N. Suntzeff (Cerro Tololo Inter-American Observatory), B. Schmidt (The Australian National University, Australia), M. Hamuy (G) (University of Arizona), M. Phillips (Las Campanas Observatory, Chile): *"Spectrophotometry of Infrared Standards."* 3(4)1.5-m

L. van Zee (Dominion Astrophysical Observatory, Canada), E. Skillman (University of Minnesota), J. Salzer (Wesleyan University): *"Stellar Rotation Curves of Starbursting Dwarf Galaxies."* 4(50.5)4-m

S. Wachter (Cerro Tololo Inter-American Observatory), G. Brammer (U) (Williams College), K. Cooksey (U) (Valparaiso University): *"An IR Survey of X-Ray Binaries: Characterizing the IR Emission of Accretion Disks."* 3(36)1.5-m

S. Wachter, D. Hoard (Cerro Tololo Inter-American Observatory), B. Johnson (G) (Columbia U.), T. Athanassiadou (U) (Yale University): *"Exploring the Newly Discovered Hα* Absorption *in the Low Mass X-Ray Binary Sco X-1."* 4(52)1.5-m, 4(52)0.9-m

G. Wallerstein, G. González (University of Washington), N. Suntzeff (Cerro Tololo Inter-American Observatory): *"The Retrograde Globular Cluster NGC 3201."* 2(21.5)4-m

F. Winkler, R. Condon (U) (Middlebury College), F. D'Arcangelo (U) (Wellesley College), C. Smith (Cerro Tololo Inter-American Observatory): *"Wide-Field Emission-Line Imaging of Galactic Supernova Remnants."* 8(87)CS

H. Yee, M. Gladders (G) (University of Toronto, Canada), E. Ellingson (University of Colorado), F. Barrientos, P. Hall, L. Infante (Pontificia Universidad Católica de Chile): *"A Wide-Field High-Redshift Galaxy Cluster Survey."* 1(12.5)4-m

APPENDIX B. OBSERVING PROGRAMS—KPNO

April – June 2001: During this period, 49 scientific programs, 6 of which were thesis programs, were carried out. Graduate and undergraduate students are indicated by a (T) for thesis students, (G) for non-thesis graduate students, and (U) for undergraduate students.

US/Foreign Thesis Programs (6)

The Evolution of Clusters and Galaxies at 1<Z<2 R. Elston (University of Florida), S. Stanford (University of California, Davis), P. Eisenhardt (California Institute of Technology), J. Mohr (University of Illinois), A. Dey, B. Januzzi (National Optical Astronomy Observatories), D. Stern (California Institute of Technology), K. Wu (University of Florida), M. Dickinson (Space Telescope Science Institute), K. McFarland (T), E. McKenzie (T), S. Raines (University of Florida)	**2.1m**	**4n**	**(18 hrs)**
Optical Followup of Serendipitous Chandra Sources P. Green, B. Wilkes (Harvard-Smithsonian Center for Astrophysics), J. Silverman (T) (Smithsonian Astrophysical Observatory), C. Foltz (University of Arizona), J. Baldwin, A. Kindt (T) (Michigan State University), B. Jannuzi (National Optical Astronomy Observatories), A. La Cluyze (T) (Michigan State University), P. Smith (University of Arizona), V. Mikles (U) (Johns Hopkins University), R. Cameron (Chandra X-ray Center)	**4m** **WIYN**	**2n** **3n**	**(15 hrs)** **(8 hrs)**
A Mini-Survey to Discover Am CVn Stars P. Groot (Harvard-Smithsonian Center for Astrophysics), G. Nelemans (T) (University of Amsterdam), D. Steeghs, T. Marsh (University of Southampton)	**4m**	**4n**	**(36 hrs)**
Optical/IR Survey of Large-Scale Structures in "the Bright Ages" (Z=1- 3) M. Malkan, J. Colbert (T) (University of California, Los Angeles)	**4m**	**3n**	**(22 hrs)**
Near-IR Spectroscopy of Lyman Break Galaxies in Two QSO Fields P. Moth (T), R. Elston, K. Wu (University of Florida)	**4m**	**2n**	**(20 hrs)**
Spectroscopy of Extratidal Stars Associated with the Ursa Minor and Leo II Dwarf Galaxies C. Palma (T), M. Siegel (T), S. Majewski, R. Patterson (University of Virginia)	**WIYN**	**6n**	**(43.5 hrs)**

US/Foreign Investigator Programs (43)

Carbon Abundance Among Subgiant Stars in M92 S. Bellman (G), M. Briley (University of Wisconsin, Oshkosh), G. Smith (University of California, Santa Cruz)	**WIYN**	**Queue**	**(3 hrs)**
Near-Earth Objects: a Multi-Wavelength Population and Exploration Assessment R. Binzel, S. Bus (G), A. Rivkin (Massachusetts Institute of Technology)	**4m**	**2n**	**(18 hrs)**
Multi-Color Imaging of Damped Ly(α) Absorbing Galaxies at Z<1.6 H. Chen, J. Prochaska (Carnegie Observatories), K. Lanzetta (SUNY at Stony Brook)	**WIYN**	**Queue**	**(1 hr)**
Are Star Forming Galaxies Associated with "Weak" Mg II Absorbers? C. Churchill (Pennsylvania State University), C. Martin (California Institute of Technology)	**WIYN**	**Queue**	**(4 hrs)**

A Statistical Measure of Galaxy Evolution A. Connolly (University of Pittsburgh), A. Szalay (Johns Hopkins University), M. Davis (University of California, Berkeley), R. Brunner (California Institute of Technology), G. Szokoly, B. Jain (Johns Hopkins University)	**4m**	**3n**	**(18.5 hrs)**
Great Observatories Origins Deep Survey (GOODS) M. Dickinson, C. Papovich (G) (Space Telescope Science Institute), P. Eisenhardt (U), D. Stern (California Institute of Technology), M. Giavalisco (Space Telescope Science Institute)	**4m**	**4n**	**(7 hrs)**
A Near-Infrared Survey of the SIRTF/Deep Groth Strip Field P. Eisenhardt (California Institute of Technology), R. Elston (University of Florida), M. Davis (University of California, Berkeley), G. Rieke (University of Arizona), J. Huang (Smithsonian Astrophysical Observatory), E. Tollestrup (Boston University), D. Stern (JPL, California Institute of Technology), E. Wright (University of California, Los Angeles)	**4m**	**4n**	**(26 hrs)**
Tracing the Star Formation History of Galaxies from Z=0.4 to 1.7 R. Elston (University of Florida), P. Eisenhardt, D. Stern (California Institute of Technology), S. Stanford (University of California, Davis), K. Wu (University of Florida), M. Dickinson (Space Telescope Science Institute), H. Spinrad (University of California, Berkeley), A. Connolly (University of Pittsburgh), S. Novotny (G), S. Raines, M. Horrobin (University of Florida)	**4m**	**5n**	**(53 hrs)**
Tracing the Star Formation History of Galaxies from Z=0.4 to 1.7 R. Elston, E. McKenzie (T), K. McFarland (G) (University of Florida), B. Jannuzi (National Optical Astronomy Observatories), S. Stanford (University of California, Davis)	**2.1m**	**3n**	**(26 hrs)**
The Properties of Intracluster Starlight in the Virgo Cluster and in the M 81 Group J. Feldmeier (Case Western Reserve University), R. Ciardullo (Pennsylvania State University), G. Jacoby (WIYN), P. Durrell, R. Stanek (U) (Case Western Reserve University)	**4m**	**3n**	**(21 hrs)**
Understanding Supermassive Black Holes and Their Host Galaxies L. Ferrarese (Rutgers University), B. Peterson (Ohio State University), D. Merritt (Rutgers University), R. Pogge (Ohio State University), A. Wandel (Hebrew University)	**4m**	**3.5n**	**(30 hrs)**
Cycles & Long-Term Variability in Solar-Type Stars M. Giampapa (National Optical Astronomy Observatories), R. Radick (AFGL), J. Hall (Lowell Observatory), S. Baliunas (Harvard-Smithsonian Center for Astrophysics), T. De Filippo (U)	**WIYN**	**2n**	**(16 hrs)**
Fundamental Plane Peculiar Velocity Survey of Rich Clusters within 200 N^{-1} M. Hudson (University of Waterloo), J. Lucey (University of Durham), D. Schade (Dominion Astrophysical Observatory), R. Smith (Universidad Catolica de Chile), N. Suntzeff (National Optical Astronomy Observatories), G. Wegner (Dartmouth College), S. Moore (University of Durham)	**WIYN**	**5n**	**(19.5 hrs)**
The NOAO Deep Wide-Field Survey B. Jannuzi, A. Dey, G. Tiede, M. Brown (National Optical Astronomy Observatories), M. Sosey (Space Telescope Science Institute), C. Greer (U) (Northwestern University)	**2.1m** **4m**	**25n** **7n**	**(183.5 hrs)** **(36 hrs)**
IR Spectroscopy of Final Flash Stars R. Joyce, K. Hinkle (National Optical Astronomy Observatories)	**4m**	**1n**	**(9 hrs)**
Obtaining FeII/MgII Flux Ratios in Low-Redshift QSOs K. Kawara, Y. Yoshii, Y. Tsuzuki (G), S. Oyabu (G), T. Tanabe (University of Tokyo)	**2.1m**	**3n**	**(29 hrs)**

SINGS: the SIRTF Nearby Galaxies Survey—Physics of the Star-Forming ISM and Galaxy Evolution

R. Kennicutt (University of Arizona), D. Calzetti (Space Telescope Science Institute), D. Dale (G) (California Institute of Technology)	**2.1m**	**1n**	**(3.5 hrs)**

The SIRTF Wide-Area Infrared Extragalactic Survey

C. Lonsdale (California Institute of Technology), H. Smith (University of California, San Diego), N. Gautier (University of California), B. Siana (G), A. Quirrenbach (University of California, San Diego), O. Pevunova (IPAC/SIRTF Science Center/Caltech), G. Morrison (G) (California Institute of Technology)	**2.1m** **4m**	**3n** **3n**	**(19 hrs)** **(20 hrs)**

Properties of Luminous Blue Compact Galaxies at Z<1 and the Global Star Formation Rate Density

J. Lowenthal (University of Massachusetts), M. Bershady (University of Wisconsin), R. Guzman (Yale University), J. Gallego (Universidad Complutensia de Madrid), N. Bouche (G) (University of Massachusetts at Amherst)	**4m**	**5n**	**(18 hrs)**

A Multiplicity Survey of Nearby G Dwarf Stars

B. Mason, W. Hartkopf (U.S. Naval Observatory), T. Henry (Johns Hopkins University), T. Rafferty (U.S. Naval Observatory), D. Soderblom (Space Telescope Science Institute), S. Urban (U.S. Naval Observatory)	**4m**	**3n**	**(16 hrs)**

Searching for Substructure in the Galactic Halo - the Imaging Survey

M. Mateo (University of Michigan), H. Morrison (Case Western Reserve University), E. Olszewski (University of Arizona), J. Arabadjis (Massachusetts Institute of Technology), R. Dohm-Palmer (University of Michigan), K. Freeman (Australian National University), P. Harding (G) (University of Arizona), J. Norris (Mt. Stromlo & Siding Spring Observatory), C. Sneden (University of Texas, Austin), A. Helmi (Max Planck Inst. for Extraterrestrial Physics)	**4m**	**3n**	**(5 hrs)**

An Interstellar Contrail

P. McCullough (University of Illinois at Urbana-Champaign), R. Benjamin (University of Wisconsin, Madison)	**4m**	**1n**	**(8 hrs)**

SQIID Observations of Diffuse Structure Near the Galactic Center

M. Merrill (National Optical Astronomy Observatories)	**2.1m**	**1n**	**(0 hrs)**

The Properties of Intracluster Light

C. Mihos, H. Morrison, J. Feldmeier (Case Western Reserve University), P. Harding (G) (University of Arizona), A. Kepley (U) (Case Western Reserve University)	**2.1m**	**5n**	**(8 hrs)**

Discovery of Faint Kuiper Belt Objects with the Mosaic Cameras

R. Millis, M. Buie (Lowell Observatory), R. Wagner (Ohio State University), J. Elliot (Massachusetts Institute of Technology), L. Wasserman (Lowell Observatory), S. Kern (G) (Massachusetts Institute of Technology)	**WIYN**	**3n**	**(16 hrs)**

The Formation of the Outer Halo and the Mass of the Galaxy

H. Morrison (Case Western Reserve University), J. Arabadjis (Massachusetts Institute of Technology), R. Dohm-Palmer (University of Michigan), K. Freeman (Australian National University), P. Harding (G) (University of Arizona), A. Helmi (Max Planck Inst. for Extraterrestrial Physics), M. Mateo (University of Michigan), J. Norris (Mt. Stromlo & Siding Spring Observatory), E. Olszewski (University of Arizona), C. Sneden (University of Texas, Austin)	**4m**	**4n**	**(18 hrs)**

The Relationship Between Bulge Velocity Dispersion and Black Hole Mass in AGN

C. Nelson (University of Nevada, Las Vegas), G. Bower, R. Green (National Optical Astronomy Observatories), D. Weistrop (University of Nevada, Las Vegas), K. Gebhardt (University of Texas, Austin)	**4m**	**6n**	**(58 hrs)**

Metallicity Effects in the Spectra and Light Curves of Nearby Type Ia Supernovae P. Nugent, G. Aldering, S. Perlmutter (University of California, Berkeley), M. Phillips (Carnegie Institution of Washington), A. Riess (Space Telescope Science Institute), R. Knop, A. Howell (University of California, Berkeley), L. Wang (University of Texas, Austin)	**2.1m** **4m**	**6n** **1n**	**(39 hrs)** **(7 hrs)**
A Deep Survey of the Coma Cluster: Is There a Large Population of Star-Forming Dwarfs? S. Odewahn, R. Windhorst (Arizona State University), M. Geller, M. Kurtz (Harvard-Smithsonian Center for Astrophysics), L. Echevarria (G) (Arizona State University)	**4m**	**2n**	**(9 hrs)**
Cosmology with High-Redshift Type Ia Supernovae S. Perlmutter, G. Aldering, R. Knop (University of California, Berkeley), I. Hook (Royal Edinburgh Observatory), G. Goldhaber, P. Nugent, A. Conley (G), D. Kasen (G), M. Wood-Vasey (G) (University of California, Berkeley), A. Goobar (Stockholm University), P. Astier (University of Paris), R. Gibbons (G) (Lawrence Livermore National Laboratory)	**WIYN**	**2n**	**(8 hrs)**
Deep Astrometry of Key Open Clusters I. Platais, T. Girard, W. van Altena (Yale University), V. Platais (Universities Space Research Association)	**4m**	**1n**	**(0 hrs)**
Galaxies Associated with Damped and Sub-Damped Ly(α) Systems S. Rao, D. Turnshek, D. Nestor (G) (University of Pittsburgh), E. Monier (Ohio State University), W. Lane (Kapteyn Astronomical Institute)	**WIYN**	**3.5n**	**(17 hrs)**
Catching Them Young: Galaxies at Z=6.6 J. Rhoads (Space Telescope Science Institute), S. Malhotra (Johns Hopkins University), A. Dey (National Optical Astronomy Observatories)	**4m**	**3n**	**(12.5 hrs)**
The Star Formation History of Local Starbursts as Benchmark for High Redshifts H. Schmitt (National Radio Astronomy Observatory), D. Calzetti (Space Telescope Science Institute), L. Armus (California Institute of Technology)	**WIYN**	**3n**	**(10 hrs)**
Dwarf Starburst Population in Distant Clusters J. Schombert (University of Oregon), K. Rakos (University of Vienna)	**4m**	**3n**	**(24 hrs)**
The Star-Formation Rates of Starbursting Dwarfs R. Schulte-Ladbeck, I. Drozdovsky, A. Hopkins (University of Pittsburgh), U. Hopp (University of Munich)	**2.1m**	**5n**	**(43 hrs)**
The SIRTF First Look Survey B. Soifer (Space Infrared Telescope Facility [SIRTF]), G. Helou (California Institute of Technology), M. Werner, L. Storrie-Lombardi, D. Shupe (SIRTF), B. Jannuzi (National Optical Astronomy Observatories), L. Yan (Carnegie Observatories)	**2.1m**	**4n**	**(31 hrs)**
Deep Near-IR Imaging of a Complete Sample of X-Ray Selected Galaxy Clusters at 0.6 < Z < 1.3 S. Stanford (University of California, Davis), P. Rosati (European Southern Observatory), P. Eisenhardt (California Institute of Technology), R. De Propris (University of New South Wales), B. Holden (University of California, Davis), M. Dickinson (Space Telescope Science Institute), G. Squires (California Institute of Technology), J. Whalen (T) (University of California, Davis)	**4m**	**3.5n**	**(24 hrs)**
High-Resolution Rotation Curves of Spiral Galaxies R. Swaters, V. Rubin (Carnegie Institution of Washington), T. Van Der Hulst (Kapteyn Astronomical Institute)	**2.1m**	**7n**	**(40 hrs)**

Imaging of Dwarf Galaxy Candidates A. Whiting (U. S. Naval Academy), G. Hau (Universidad Catolica de Chile), M. Irwin (Institute of Astronomy)	**2.1m**	**6.5n**	**(30.5 hrs)**
Radial Velocity Variables in the PG Survey He-Rich Hot Subdwarf O Stars T. Williams, T. Burdulis (G) (University of New Mexico)	**2.1m**	**7n**	**(42.5 hrs)**
Extragalactic Reference Frame Link of the UCAC Project N. Zacharias (U.S. Naval Academy), T. Rafferty, M. Zacharias (U.S. Naval Observatory)	**2.1m**	**5n**	**(33 hrs)**
Structure Analysis and Astrometry of Extragalactic Sources for a Fame/ICRF Link N. Zacharias (U.S. Naval Academy), A. Fey, D. Boboltz, K. Johnston, M. Zacharias (U.S. Naval Observatory)	**WIYN**	**2n**	**(15 hrs)**

APPENDIX C. OBSERVING PROGRAMS—GEMINI, HET, AND MMT

Gemini (International Gemini Observatory)

April – June 2001: During this period, observations were obtained at the International Gemini Observatory for the following US programs:

"Mid-Infrared Imaging of M87" 2n (9 hrs)
E. S. Perlman, U. Maryland; J. Biretta, W. B. Sparks, Space Telescope Science Institute;
F. Duccio Macchetto, ESA/Space Telescope Science Institute; A. Martel, Johns Hopkins U.

"A High-Resolution Mid-Infrared Study of Circumstellar Disks around Massive Stars" 1n
J. De Buizer, National Optical Astronomy Observatory; R. Pina, U. Florida

"Direct Imaging of Very Low Mass Companions" .5n
L. Close, J. Liebert, A. Burrows, M. Meyer, Steward Observatory

"Imaging the Final Flash Shell around V605 Aq1" .5n
K. Hinkle, R. Joyce, National Optical Astronomy Observatory; A. Hedden, Carleton College

"The Host Galaxies of Very High Redshift Quasars" .5n
R. J. Brunner, California Institute of Technology; R. Weymann, Carnegie Observatories;
L. Storrie-Lombardi, SIRTF Science Center, Caltech

HET (Hobby-Eberly Telescope at Mcdonald Observatory): This is the second quarter during which observations have been obtained at the Hobby-Eberly telescopes under the Public Access program established through the support of the National Science Foundation. Under this agreement, 162 nights will be made available to the astronomical community through NOAO through at least 6 years. Since the HET is queue scheduled, this number of nights is equivalent to 168 hours per year of actual data collection, once the Hobby-Eberly telescope is in full operation.

April – June 2001: During this period, observations were obtained for the following science programs:

"Lithium-rich Giants in Globular Clusters"
C. Pilachowski, National Optical Astronomy Observatory; C. Sneden, University of Texas at Austin; S. Wolff, National Optical Astronomy Observatory

MMT (6.5-m Telescope of the MMT Observatory): This is the second quarter during which observations have been scheduled at the 6.5-m telescope of the MMT Observatory under the Public Access program established through the support of the National Science Foundation. Under this agreement, 162 nights will be made available to the astronomical community through NOAO through at least 6 years. When the 6.5-m telescope is in full operation, the community can expect to receive 27 nights per year.

April – June 2001: During this period, observing time was scheduled on the MMT for the following programs:

"Deep MMT K-band imaging of the HDF-North"
M. Dickinson, Space Telescope Science Institute; D. McCarthy, Steward Observatory; R. Finn, Steward Observatory; R. Elston, U. Florida; P. Eisenhardt, JPL/CalTech; S. Adam Stanford, UC Davis/IGPP; M. Bershady, U. Wisconsin (April 12-14, 2001)

"High-Redshift Clusters of Extremely Red Objects"
M. C. Liu, Institute of Astronomy; A. Dey, National Optical Astronomy Observatory; J. R. Graham, UC Berkeley; D. McCarthy, Steward Observatory (April 15-17, 2001)