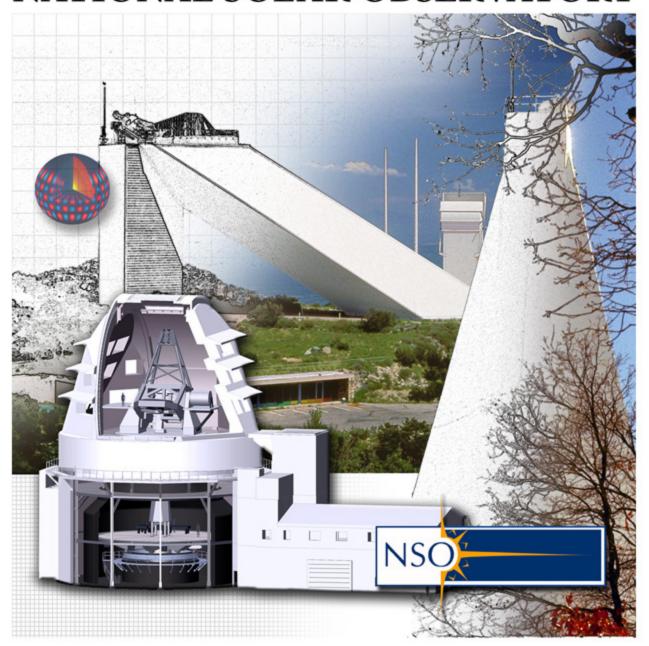
NATIONAL SOLAR OBSERVATORY



NSO Quarterly Report (2) FY 2004 January 1, 2004 – March 31, 2004

Submitted to the National Science Foundation Under Cooperative Agreement No. AST-0132798 (SPO No. 2)

Also published on the NSO Web site: http://www.nso.edu





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This report consists of summary statistics and other data on NSO observing programs and telescope usage, and a safety report for the fiscal quarter ended March 31, 2004. Quarterly highlights of public and educational outreach activities are also described. The appendix contains a comprehensive list of principal investigators and collaborators, program titles, telescopes used, and observing hours associated with the quarter's observing programs.

Scientific highlights and current updates on NSO initiatives, new capabilities, instrumentation, and operational activities are published separately in the quarterly *NOAO-NSO Newsletter*.

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I. Observing Programs*

25 observing programs were carried out at NSO this quarter, two of which were thesis programs. A comprehensive list of PI's, Co-I's, and collaborators, as well as program titles, telescopes used, and observing hours associated with the quarter's observing programs is attached as the Appendix.

NSO Observing Programs by Type (US vs Foreign)				
12 Months Ending Mar-2004	Nbr	% Total		
Programs (US)	19	76%		
Programs (non-US)	4	16%		
Thesis (US)	1	4%		
Thesis (non-US)	1	4%		
Total Number of Unique Science Projects*	[*] 25	100%		

^{*}Includes observing programs conducted by NSO/NOAO staff scientists.

Users of NSO Facilities by Category					
		Vis	NSO/NOAO Staff		
	US	Non-US	Total	% Total	
PhDs	18	12	30	91%	12
Graduate Students	1	1	2	6%	-
Other (Research Tech.)	0	1	1	3%	6
Total Users	19	14	33	100%	18

Institutions Represented by Visiting Users**				
	US	Non-US	Total	% Total
Academic	5	4	9	60%
Non-Academic	5	1	6	40%
Total Academic & Non-Academic	10	5	15	100%

^{**}Note: Total number of institutions represented by users do not include departments or divisions within an institution as separate entities (e.g., US Air Force and NASA are each counted as one institution even though several different sites/bases/centers are separately listed in the data base.

INSTITUTIONS REPRESENTED BY USERS
Foreign Institutions (5)
INAF - Arcetri Astrophysical Observatory
Kyoto University, Hida Observatory
Kyoto University, Kwasan Observatory
Max-Planck-Institut fur Aeronomie
University College London, Mullard Space Science Lab
University of Waterloo

US Institutions (10)

American Institute of Physics California Institute of Technology Colorado Research Associates

Dickenson College

NASA Jet Propulsion Laboratory

NASA/Goddard Space Flight Center

NASA/Langley Research Center

New Jersey Institute of Technology

New Mexico Institute of Mining & Technology

Southwest Research Institute, San Antonio

University of Arizona

US Air Force, Los Angeles AFB

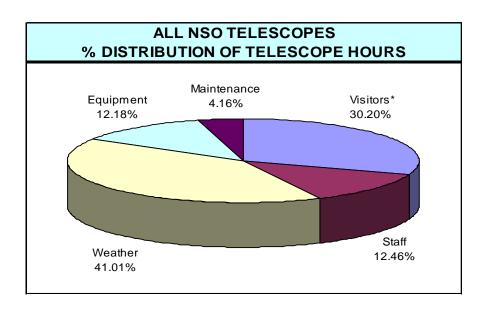
US Air Force/Philips Lab (USAF/PL/GSS)

Number of Users by Nationality				
Canada	1	Italy	5	
England	3	Japan	4	
Germany	1	United States	37	

II. Telescope Usage and Performance Data

In the quarter ending March 31, 2004, 30.20% of total available telescope hours at NSO/Sacramento Peak and NSO/Kitt Peak went to the observing programs of visiting principal investigators and synoptic programs; 12.46% were devoted to the programs of NSO and NOAO scientists. Scheduled maintenance, including instrument tests, engineering, and equipment changes, accounted for 4.16% of total allotted telescope hours.

Total "downtime" (hours lost to weather and equipment problems) for NSO telescopes was 53.19%. Almost all of these lost observing hours were due to bad weather (41.01%), with 12.18% lost to equipment problems.



NSO TELESCOPES Percent Distribution of Telescope Hours (Scheduled vs. Downtime) January - March 2004						
		% Hours	Used By:	% Hours	s Lost To:	% Hrs. Lost To:
Telescope	Hours Available	Visitors ^a	Staff	Weather	Equipment	Scheduled Maintenance
Dunn Solar Telescope/SP	782.0	26.0%	11.5%	37.3%	14.3%	10.9%
McMath-Pierce	653.5	24.3%	39.9%	30.1%	5.7%	0.0%
KP Vacuum Telescope ^b	0.0	0.0%	0.0%	0.0%	0.0%	0.0%
FTS Lab	346.0	39.6%	0.0%	0.0%	51.2%	9.2%
Evans Facility	268.0	27.6%	0.0%	67.2%	5.2%	0.0%
Hilltop Dome	766.0	36.2%	0.0%	63.4%	0.4%	0.0%
All Telescopes	2,815.5	30.2%	12.5%	41.0%	12.2%	4.2%

^aIncludes synoptic programs for which all data are made available immediately to the public and the scientific community at large.

^bThe KPVT was closed on September 22, 2003 to prepare for SOLIS. The KPVT will become the Kitt Peak SOLIS Tower (KPST).

III. User Statistics - Archives/Data Bases

A. NSO/Sacramento Peak (NSO/SP)

Combined User Demographics (NSO/SP)				
Demographic Group Requests Traff				
U.S. Science (.gov, .edu, .mil)	9.1%	5.7%		
Other U.S. (.com, .net, misc.)	60.7%	72.2%		
Foreign	26.7%	19.6%		
Unresolved	3.6%	2.5%		

NOTE: Historical use trends can be found at http://www.nso.edu/WEB-REPORTS/trends.html. Sac Peak statistics exclude the use of NSO archives and data bases from within the NSO/SP Local Area Network (LAN), from the NSO/Tucson LAN, and from NOAO as a whole.

FTP Archive Statistics

There were 149,454 successful user requests, serving 909 distinct files to 6,363 distinct hosts. A total of 17.919 Gbytes were served, averaging 201.642 Mbytes per day.

FTP User Demographics (NSO/SP)				
Demographic Group	Requests	Traffic		
U.S. Science (.gov, .edu, .mil)	6.4%	3.9%		
Other U.S. (.com, .net, misc.)	72.6%	83.8%		
Foreign	20.4%	11.8%		
Unresolved	0.7%	0.5%		

FTP Products (NSO/SP)				
Demographic Group	Requests	Traffic		
Realtime Images	39.3%	72.6%		
Corona Maps	56.9%	19.6%		
Sunspot Numbers	1.1%	0.2%		
Staff Outgoing	2.1%	5.3%		
Other	0.6%	2.3%		

World Wide Web Statistics

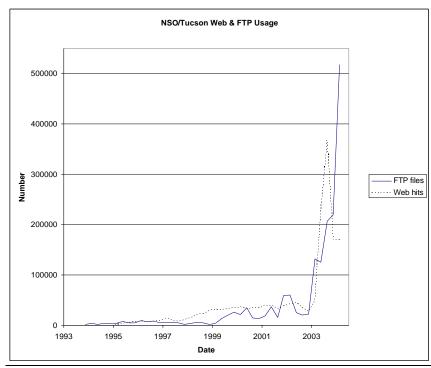
There were 1,291,165 successful user requests, serving 23,406 distinct files to 98,373 distinct hosts. A total of 21.697 Gbytes were served, averaging 244.164 Mbytes per day.

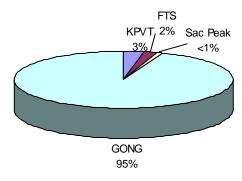
WWW User Demographics (NSO/SP)				
Demographic Group	Requests	Traffic		
U.S. Science (.gov, .edu, .mil)	9.4%	7.2%		
Other U.S. (.com, .net, misc.)	59.3%	62.6%		
Foreign	27.4%	26.0%		
Unresolved	3.9%	4.2%		

WWW Products (NSO/SP)				
Demographic Group	Requests	Traffic		
Realtime Images and Movies	10.5%	17.8%		
Other Images	4.5%	23.5%		
General Icon and Background Images	30.3%	11.7%		
Public Relations Pages	15.4%	11.7%		
Press Releases	1.6%	9.2%		
Telescope Home Pages	11.7%	6.8%		
ISOON	1.6%	0.5%		
Adaptive Optics Pages	0.9%	3.2%		
General Information	9.1%	4.3%		
Staff Pages	0.6%	3.6%		
Other	13.8%	7.7%		

B. NSO/Tucson

- Most recent complete quarter (01 January 31 March 2004)
 - 1. 533 FTP users
 - 2. 35,674 FTP logins
 - 3. 518,152 files downloaded via anonymous FTP
 - 4. 169,838 Web page hits (not counting in-line images)
 - 5. 941,781 Web page hits including in-line images
- Distribution of downloaded data products by number of files for the most recent complete quarter:
 - 1. 3% KPVT (magnetograms, synoptic maps, helium images).
 - 2. 2% FTS (spectral atlases, general archive).
 - 3. <1% Sac Peak spectroheliograms (Hα, Calcium K images).
 - 4. 95% GONG (magnetograms, spectra, time series, frequencies).





Note: All statistics are for NSO/Tucson archive usage by non-NSO and non-NOAO personnel. The numbers do not include NSO/Sunspot.

IV. Public and Educational Outreach Activities

NSO public and educational outreach encompasses activities at the Sunspot Astronomy and Visitor Center, including the Visitor Center's retail operations, educational exhibits, and NSO/Sac Peak tours; tours of the NSO/Kitt Peak facilities; Web site outreach, including public information requests; scientific press and media relations; and staff involvement in programs to enhance science education in grades K–12, as well as higher education. Highlights for this quarter follow.

A. Educational Outreach

1. Research Experiences for Undergraduates (REU), Research Experiences for Teachers (RET), and Summer Research Assistantship (SRA) Programs

During this quarter, 54 applications were accepted for NSO's 2004 Research Experiences for Undergraduate Program and 10 applications were accepted for NSO's graduate Summer Research Assistantship Program. Another 17 teachers applied for NSO's 2004 Research Experiences for Teachers Program. In addition, applications were accepted by NSO's Air Force Research Laboratory Sunspot contingent for the 2004 Summer Space Scholars Program.

2. Teacher Leaders in Research Based Science Education (TLRBSE) and Project ASTRO

On February 23-26, Claude Plymate and Frank Hill, in collaboration with Connie Walker (NOAO), Steve Croft (NOAO), and Don McCarthy (U. Arizona), led a group of two high school teachers and five students on an observing run that marked the debut or introduction of a new solar observing program for TLRBSE teachers and students. The initial run was a great success as the teachers and students took, reduced, and analyzed data from the McMath-Pierce telescope which they then brought back to the classroom for further study. Results will appear in the *RBSE Journal* this spring. Plymate, Hill, and Christoph Keller were instrumental in coordinating the planning and implementation of this program. Three of the high school students from Longview, Washington were featured in Longview's local *Daily News* on March 8. The article described the students' solar project and their observing run at the McMath-Pierce Telescope. That article is available at http://www.tdn.com/articles/2004/03/08/this_day/news01.txt.

Irene Gonzalez-Hernandez and Kerri Donaldson-Hanna participated in the Project ASTRO workshops on January 21, February 4, and February 25.

3. Further Undergraduate and Graduate Outreach

Educational Outreach Officer Dave Dooling attended the annual conference of the New Mexico Space Grant Consortium at New Mexico State University (NMSU) in Las Cruces on January 9. Dooling also gave a lecture on solar physics research to a science seminar class at the NMSU-Alamogordo campus on February 27. On February 10, Dooling, Joel Mozer, Rich Radick, and Han Uitenbroek helped judge the Alamogordo Public Schools Science Fair, which was co-chaired by Jackie Diehl. More than 250 invitations were mailed to New Mexico and El Paso teachers and schools, reminding them of Sunspot as a site for educational field trips. Dooling developed a mini-newsletter for mailing to New Mexico- and El Paso-area teachers on a quarterly basis, with April 2004 targeted for the first-issue release.

Han Uitenbroek gave a talk about numerical modeling of the solar spectrum at New Mexico State University (NMSU)-Alamogordo for a "General Introduction to Science" class. Joel Mozer also gave a tour of the NSO Sac Peak facilities to NMSU-Alamogordo astronomy students in March.

AFRL/NSO scientist Joel Mozer taught an introductory course in Astronomy, ASTRO 110G, "A Survey of the Universe," at New Mexico State University-Alamogordo. Nathan Dalrymple, Don Neidig and Jackie Diehl presented guest lectures in February and March for this course.

4. Other Educational Outreach

Beginning in January, Matt Penn was a mentor to Carlus E. Kilgore, Jr., a Tucson architect coaching a 6th to 8th grade Science Olympiad Team studying Astronomy. The 15-student team prepared for the 2004 Southern Arizona "Reach for the Stars" Regional and Arizona State Tournaments. Penn answered questions and critiqued the solar research related information posted on a Web site Kilgore developed for the students. The 8th graders placed 3rd in the State Tournament and 28th in the Nationals in Pennsylvania.

Mark Giampapa was a judge in February for the 3rd grade science fair entries at Fruchthendler Elementary School in Tucson. The winning posters went to the Southern Arizona Regional Science and Engineering Fair (SARSEF). Kerri Donaldson-Hanna, Bill Livingston and Roberta Toussaint served as SARSEF judges at the Tucson Convention Center in March.

A day of talks on the Sun was given by Joel Mozer to 6th grade science classes at Chapparal Middle School in Alamogordo, NM on February 13, and on March 19 K.S. Balasubramaniam participated in a 30-minute Career Day forum at the Cloudcroft Elementary School (Grades 6-8).

B. Public Outreach

1. Sunspot Visitor Center

Sunspot Astronomy & Visitor Center Summary of Visitors and Tours (3 Months Ending 03/31/04)		
Group/Program	No. of Visitors	
General Public Tours		
(Visits to Center and		
Self-Guided Tours)	2,108	
Guided Public Tours:		
- School Groups K-12		
- Special Tours	31	
Total Visitors	2,139	

2. Other Public Outreach

A major effort during this quarter was development of a preliminary concept for "Magnetic Carpet Ride," a traveling museum exhibit on the magnetic nature of the Sun. Funding will be sought through the National Science Foundation for a planning grant to solicit partners to work with NSO on the design and educational content, and to hold a preliminary design workshop. These efforts will lead to a formal grant proposal for full funding. "Magnetic Carpet Ride" is being developed as a part of the *Max 2008* education initiative.

Dave Dooling prepared a PowerPoint slide show (and several variations) for presentation to the public. Dooling also prepared two fact sheets, "A Quick Tour of the Sun" and "Tour of Sunspot" for use by the Sunspot Visitor Center.

On March 19, Director Steve Keil gave a public lecture at the Lodestar Planetarium in Albuquerque about the ATST entitled "Building the World's Largest Solar Telescope."

Kerri Donaldson-Hanna spent several hours each day on March 18 and 19 at the NOAO PAEO hosted booth at the Math, Science and Technology Fun Fest at the Tucson Convention Center. The event featured about 70 exhibits for more than 7,400 student attendees.

GONG images of the Mercury Transit were used in a Physics Olympiad in Nice, France, and a student at a school in Draguignan won 2nd prize in the Olympiad with a project on how to calculate the distance between the Earth and the Sun by observing the Mercury Transit. That work can be found at (http://www.ac-nice.fr/physique/fb/Oly04/html/).

Bill Livingston prepared a DVD on atmospheric optical effects at Kitt Peak for limited circulation to the public. Livingston also hosted a visit to Kitt Peak by Gary Ladd, who is compiling material (with Livingston's help) for an *Arizona Highways* article on "Arizona Sun."

3. External Coordination

As a follow-up to his participation in the October 2003 Conference on Communicating Astronomy to the Public, Dave Dooling served on an ad hoc committee to simplify the problems faced by teachers in locating scientifically sound resources on the Web.

C. Media and Public Information

1. Press Releases and Image Releases

NSO did not issue any press releases this quarter. However, several of the NSO scientific staff who were interviewed in Winter 2003 by Curt Suplee for a *National Geographic Magazine* article on The Sun (July 2004 issue) contributed images and/or provided input as requested by Suplee this quarter.

2. Special Information Products

Printing of a 20-page booklet on the ATST project was completed and distribution began in January. The booklet describes the need for ATST, including the science that will be accomplished with the facility.

V. Safety Report

A. OSHA Recordable Occupational Injuries and Illnesses

• During this quarter, no recordable injuries occurred at Sacramento Peak. However, NOAO and NSO Tucson experienced two OSHA recordable injuries, one each at Kitt Peak and the downtown headquarters.

B. Safety and Health

- As an annual requirement, the OSHA 300A injury and illness logs for Tucson, Kitt Peak and Sac Peak were completed, signed by the respective Directors and posted throughout the facilities before February 1, 2004.
- Risk management considerations for the movement and lifting of the NSO SOLIS instrument to the Kitt
 Peak vacuum tower are being addressed. A safety and health action plan has been prepared and is being
 followed, the hoisting and moving plan by a contractor has been reviewed, inland marine insurance
 language was reviewed and the policy is now active, personal fall protection equipment for the job has

been ordered and received, and pre-lift considerations were made for equipment that will be lifted by Kitt Peak personnel.

- A critical lift plan was created in preparation for any mobile and fixed crane lifts that may be done by Kitt Peak personnel.
- Safety and health inspections were conducted at the Kitt Peak kitchen, NSO FTS, SOLIS, DMAC building remodel project, and maintenance facilities.
- Thirty-Three Kitt Peak employees and tenants attended the American Heart First aid, CPR, AED training on February 10, 12, and March 16, 2004. Ms.Adrianne Rios, American Heart CPR and First Aid Instructor and Tohono O'odham Nation Fire fire fighter conducted the training seminar.
- NOAO Tucson provided a letter to the University of Arizona police department that contained updated NOAO and NSO emergency contact names and telephone numbers.
- The worker compensation tele-claim information form was updated and reissued to managers and insurance coordinators.
- Respirator medical evaluations and respirator fit testing were completed for two Kitt Peak and one Tucson employee.
- Department of Transportation medical evaluations were completed for two of the NOAO/NSO facilities employees who have Certified Drivers Licenses (CDL's).
- Six NOAO and NSO employees attended a Fall Protection Competent Person for Safety at Heights seminar on March 3, 4, and 5, 2004. Persons attending were Will Goble, Frank Gidney, Fred Wortman, Scott Long, Eric Galayda and Chuck Gessner.
- Material Safety Data Sheets for Kitt Peak facilities and the Optics lab were updated.

C. Fire Protection and Prevention

- Tohono O'odham Nation Fire Management Officer Guy Acuna informed NOAO/NSOTucson that the Bureau of Indian Affairs (BIA) approved the Kitt Peak National Observatory Wildland/Urban Interface Fire Mitigation Plan. Approximately \$356,000 will be allocated for hazardous fuel reduction at Kitt Peak. The proposed start up date is July 2004, which will include continuation of defensible space around critical structures and utilities, and fire breaks. The approval and obtainment of funds was due to the interagency cooperation between the Bureau of Indian Affairs Western Regional Office, Tohono O'odham Nation Fire Management Program, Southwest Region-Fire Management United States Fish and Wildlife Service and NOAO Kitt Peak management.
- Fire extinguishers, fire sprinkler protection and fire alarms at Tucson and Kitt Peak facilities were inspected and maintained this quarter.

D. Environmental

• The Arizona Department of Environmental Quality 2003 Facility Annual Report (FAR) was completed and submitted for NOAO- NSO Tucson. The Tucson facility maintains and enjoys its status as a Conditionally Exempt Small Quantity Generator of Hazardous Waste.

 Properly disposed of approximately 100 pounds of used batteries that will be recycled. The Tucso hazardous chemical storage area was inventoried and organized. 	n
Risk Management services at NSO/Kitt Peak and Tucson are shared with NOAO. See also the "Tucson Kitt Peak Safety Report" section of the NOAO January - March 2004 Quarterly Report for additional details risk management activities.	and s on

APPENDIX National Solar Observatory 01 January - 31 March 2004

January - March 2004: During this period, 25 observing programs, 2 of which were thesis programs, were carried out at the National Solar Observatory. Graduate and undergraduate students are indicated by (T) for thesis students, (G) for non-thesis graduate students, (UT) for undergraduate thesis students; and (U) for undergraduate students. (TLRBSE) identifies middle and high school teachers who are Teacher Leaders in Research Based Science Education program participants.

		Nights	Days	Hours
8		0.0	4.0	32.0
Michael Dulick	National Solar Observatory			
FTS Beamsplitter Chang	ges			
McMP FTS Lab				
1222		0.0	12.0	41.0
Curtis Rinsland	NASA Langley Research Center	0.0	12.0	41.0
Monitoring of Long-Ter	m Trends in the Concentrations of Atmospheric Gases	from McMath FTS	Solar Spectra	
McPE FTS/Mc-P				
1661	T.D. In T.I.	0.0	12.0	66.0
Linda Brown	Jet Propulsion Laboratory			
Miller	Haverford College, Dept. of Chemistry			
Benner	College of William and Mary			
di Como	Jet Propulsion Laboratory			
Toth	Jet Propulsion Laboratory			
Laboratory Infrared Spe	ectroscopy			
McMP FTS Lab				
1858		0.0	5.0	173.0
William Livingston	National Solar Observatory	0.0	3.0	175.0
Cycle Variability of the S	Solar Spectrum			
McMP Main spectrogra	ph			
1948		0.0	8.0	71.0
Peter Bernath	University of Waterloo			
Ram	University of Arizona			

Laboratory Spectroscopy of Molecules Found in the Sun

McMP FTS Lab

		Nights	Days	Hours
2127		0.0	16.9	46.0
Richard Altrock	USAF Research Laboratory			
Three-Line Coronal Photome	eter			
Evans Facility Sac Peak				
2128		0.0	14.8	28.0
Simon Worden	USAF			
Keil	National Solar Observatory			
Ca K Solar Rotation				
Evans Facility Sac Peak				
2141		0.0	10.0	76.0
2141 Steve Hegwer	National Solar Observatory	0.0	10.0	76.0
Spence	National Solar Observatory			
Gilliam	National Solar Observatory			
Telescope Alignment (Mainte				
Dunn Solar Telescope/SP Sa	c Peak			
2149		0.0	90.0	277.0
Archives	National Solar Observatory	0.0	70.0	277.0
	,			
Flare Patrol: Daily/Commun	nity			
Hilltop Dome Sac Peak				
2219		0.0	3.0	0.0
Donald Lubowich	American Institute of Physics	0.0	3.0	0.0
Bondid Eddowien	Timerican institute of Friques			
The Solar Boron Abundance				
McMP FTS/Mc-P				
2245		0.0	10.0	8.0
Christoph Keller	National Solar Observatory			
ATST Key Technology Develo	opments			

McMP Main spectrograph

		Nights	Days	Hours
2282		0.0	19.0	67.0
Donald Jennings	NASA/Goddard Space Flight Center			
Boyle	Dickinson College			
Zeeman Splitting in OF	H at 12 Microns			
McMP FTS/Mc-P				
2292		0.0	5.0	40.0
Claude Plymate	National Solar Observatory			
Infrared Spectral Imag	ing at the McMath-Pierce Solar Telescope			
McMP Main spectrogr	raph			
2366		0.0	7.0	51.0
Drake Deming	NASA/Goddard Space Flight Center			
Plymate	National Solar Observatory			
The Apparent Velocity	of Integrated Sunlight			
McMP FTS/Mc-P				
2367		0.0	9.0	27.0
Andrew Potter	National Solar Observatory			
Plymate	National Solar Observatory			
Killen	Southwest Research Institute			
Adaptive Optics for Pla	netary Observations at the McMath-Pierce Telescope			
McMP Main spectrogr	raph			
2367n		9.0	0.0	33.0
Andrew Potter	National Solar Observatory			
Plymate	National Solar Observatory			
Killen	Southwest Research Institute			
Adaptive Optics for Pla	netary Observations at the McMath-Pierce Telescope			
McMP Main spectrogr	raph			

		Nights	Days	Hours
2375		0.0	5.0	20.0
Constance Walker	National Optical Astronomy Observatory			
Plymate	National Solar Observatory			
Hill	National Solar Observatory			
Keller	National Solar Observatory			
TLRBSE Teachers				
Understanding the Morphol	ogy of Active Regions: Using Zeeman-Split IR Lines	to Determine Mag	netic Field Str	engths of
McMP Main spectrograph				
2376		0.0	14.9	31.0
Krishna Balasubramaniam	National Solar Observatory			
Keil	National Solar Observatory			
Watts	New Mexico Institute of Mining & Technology, Pl	nysics Dept.		
Stokes Vector Polarimetry o	f White-Light Plage, Chromospheric Plage & Quiet-S	Sun Regions		
Dunn Solar Telescope/SP S	ac Peak			
2379		0.0	7.5	18.0
Mark Giampapa	National Solar Observatory			
Stauffer	California Institute of Technology			
Balasubramaniam	National Solar Observatory			
Berst	National Solar Observatory			
Chromospheric Activity and	the Anomalous Colors of the Pleiades K Dwarf Stars	S		
Dunn Solar Telescope/SP S	ac Peak			
2384		0.0	10.0	24.0
Gianna Cauzzi	Osservatorio Astrofisico di Arcetri	0.0	10.0	24.0
Teriaca	Max-Planck-Institut fur Aeronomie			
Janssen	INAF - Osservatorio Astrofísico di Arcetri			
Solar Activity Studies at Hig	th Spatial Resolution with the Interferometric BIdime	ensional Spectrome	eter (IBIS)	
Dunn Solar Telescope/SP S	ac Peak			
2393		0.0	3.0	24.0
Fabio Cavallini	INAF - Arcetri Astrophysical Observatory			
Grisendi	INAF - Arcetri Astrophysical Observatory			
Reardon (O)	INAF - Arcetri Astrophysical Observatory			

Interferometric Bidimensional Spectrometer (IBIS) Optical Alignment and Systems Operation

Dunn Solar Telescope/SP Sac Peak

		Nights	Days	Hours
2394		0.0	15.1	69.0
Martin Woodard	Colorado Research Associates			
Rimmele	National Solar Observatory			
Reardon (O)	INAF - Arcetri Astrophysical Observatory			
Small-Scale Acoustic Energ	y Generation in the Solar Photosphere			
Dunn Solar Telescope/SP S	ac Peak			
2395		0.0	9.5	27.0
Sarah Matthews	University College London, Mullard Space Science Lab			
Reardon (O)	INAF - Arcetri Astrophysical Observatory			
van Driel	University College London, Mullard Space Science Lab			
Cauzzi	Osservatorio Astrofisico di Arcetri			
Williams	Mullard Space Science Laboratory			
Photospheric Response to F	lares			
Dunn Solar Telescope/SP S	ac Peak			
2396		0.0	10.5	46.0
Shin'ichi Nagata	Kyoto University, Hida Observatory			
Ishii	Kyoto University, Kwasan Observatory			
Asai (T)	Kyoto University, Kwasan Observatory			
Shibata	Kyoto University, Kwasan Observatory			
High Time Cadence Observe	ations of Hot and Cool Coronal Loops Foot Points			
Dunn Solar Telescope/SP S	ac Peak			
2397		0.0	10.0	54.0
Thomas Rimmele	National Solar Observatory			
Richards	National Solar Observatory			
Marino (T)	New Jersey Institute of Technology			

Low Order Adaptive Optics (LOAO) Upgrade (PSF Estimation)

Dunn Solar Telescope/SP Sac Peak