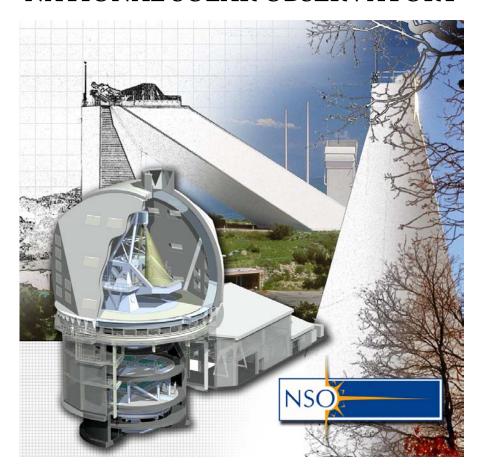
NATIONAL SOLAR OBSERVATORY



NSO Quarterly Report (1) FY 2004 October 1, 2003 – December 31, 2003

Submitted to the National Science Foundation Under Cooperative Agreement No. AST-0132798 Scientific Program Order No. 2

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





National Solar Observatory

Quarterly Report (1) FY 2004 October 1 – December 31, 2003

Submitted to the National Science Foundation under Scientific Program Order No. 2, Cooperative Agreement No. 0132798

February 24, 2004

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

This report consists of summary statistics and other data on NSO observing programs and telescope usage, and a safety report for the fiscal quarter ending December 31, 2003. 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*.

Table of Contents Observing Programs	
I. Observing Programs	2
II. Telescope Usage and Performance Data	3
III. User Statistics – Archives and Data Bases	4
IV. Public and Educational Outreach Activities	6
V. Safety Report	10
APPENDIX – Observing Programs	11

I. Observing Programs*

28 observing programs were carried out at NSO this quarter, three of which were thesis programs involving four graduate students. 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 Dec-2003	Nbr	% Total	
Programs (US)	20	71%	
Programs (non-US)	5	18%	
Thesis (US)	1	4%	
Thesis (non-US)	2	7%	
Total Number of Unique Science Project	ts* 28	100%	

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

Users of NSO Facilities by Category								
		Vis		NSO/NOAO Staff				
	US	US Non-US Total % Total						
PhDs	18	15	33	89%	9			
Graduate Students	2	2	4	11%	-			
Undergraduate Students	0	0	0	0%	-			
Other (Research Tech.)	0	0	0	0%	7			
Total Users	20	17	37	100%	16			

Institutions Represented by Visiting Users**					
	US	Non-US	Total	% Total	
Academic	5	6	11	69%	
Non-Academic	3	2	5	31%	
Total Academic & Non-Academic	8	8	16	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 (8)		
INAF - Arcetri Astrophysical Observatory		
Osservatorio Astrofisico di Arcetri		
Univeristy of Calgary		
University of Cologne		
University of Florence		
Universita "La Sapienza", Rome		
University of Rome "Tor Vergata"		
University of Waterloo		
US Institutions (8)		
California State University, Northridge		
NASA Jet Propulsion Laboratory		
NASA/Goddard Space Flight Center		
NASA/Langley Research Center		
New Jersey Institute of Technology		
Southwest Research Institute, San Antonio		
University of Arizona		
University of Colorado		
University of Hawaii		
US Air Force, Los Angeles AFB		

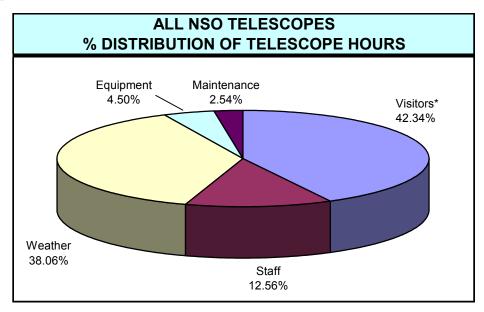
US Air Force/Philips Lab (USAF/PL/GSS)

Num	ber of Us	ers by Nationality	
Canada	3	Italy	10
Germany	4	United States	36

II. Telescope Usage and Performance Data

In the quarter ending December 31, 2003, 42.34% of total available telescope hours at NSO/Sacramento Peak and NSO/Kitt Peak went to the observing programs of visiting principal investigators as well as synoptic programs; 12.56% were devoted to the programs of NSO and NOAO scientists. Scheduled maintenance, including instrument tests, engineering, and equipment changes, accounted for 2.54% of total allotted telescope hours.

Total "downtime" (hours lost to weather and equipment problems) for NSO telescopes was 42.56%. Almost all of these lost observing hours were due to bad weather (38.06%), with 4.50% lost to equipment problems.



NSO TELESCOPES Percent Distribution of Telescope Hours (Scheduled vs. Downtime) October - December 2003						
		% Hours	Used By:	% Hours	s Lost To:	% Hrs. Lost To:
Telescope	Hours Available	Visitors ^a	Staff	Weather	Equipment	Scheduled Maintenance
Dunn Solar Telescope/SP	790.0	31.6%	22.7%	27.8%	7.6%	10.3%
McMath-Pierce	892.5	46.3%	32.0%	19.1%	2.6%	0.0%
KP Vacuum Telescope ^b	0.0	0.0%	0.0%	0.0%	0.0%	0.0%
FTS Lab	159.5	89.7%	0.0%	0.0%	2.2%	8.2%
Evans Facility	260.0	38.5%	0.0%	48.5%	13.1%	0.0%
Hilltop Dome	1,601.0	41.3%	0.0%	55.8%	2.9%	0.0%
All Telescopes 3,703.0 42.3% 12.6% 38.1% 4.5% 2.5%						

^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.

III. User Statistics - Archives/Data Bases

A. NSO/Sacramento Peak (NSO/SP)

Combined User Demographics (NSO/SP)				
Demographic Group	Requests	Traffic		
U.S. Science (.gov, .edu, .mil)	8.4%	6.1%		
Other U.S. (.com, .net, misc.)	64.7%	69.8%		
Foreign	18.8%	17.4%		
Unresolved	8.2%	6.7%		

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 254,968 successful user requests, serving 2,769 distinct files to 14,759 distinct hosts. A total of 25.640 Gbytes were served, averaging 285.461 Mbytes per day.

FTP User Demographics (NSO/SP)				
Demographic Group	Requests	Traffic		
U.S. Science (.gov, .edu, .mil)	6.1%	4.5%		
Other U.S. (.com, .net, misc.)	72.2%	80.7%		
Foreign	17.1%	11.3%		
Unresolved	4.6%	3.4%		

FTP Products (NSO/SP)				
Demographic Group	Requests	Traffic		
Realtime Images	31.8%	62.2%		
Corona Maps	64.9%	25.1%		
Sunspot Numbers	1.3%	0.1%		
Staff Outgoing	1.7%	11.3%		
Other	0.3%	1.3%		

World Wide Web Statistics:

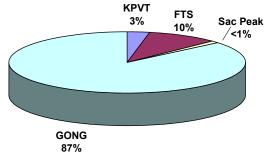
There were 1,760,691 successful user requests, serving 20,725 distinct files to 126,729 distinct hosts. A total of 33.776 Gbytes were served, averaging 375.952 Mbytes per day.

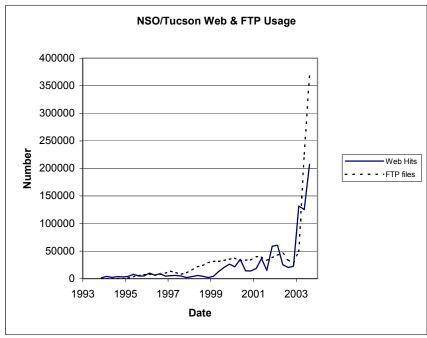
WWW User Demographics (NSO/SP)				
Demographic Group	Requests	Traffic		
U.S. Science (.gov, .edu, .mil)	8.7%	7.3%		
Other U.S. (.com, .net, misc.)	63.6%	61.5%		
Foreign	19.0%	22.0%		
Unresolved	8.7%	9.2%		

WWW Products (NSO/SP)			
Demographic Group	Requests	Traffic	
Realtime Images and Movies	9.0%	19.5%	
Other Images	6.9%	26.1%	
General Icon and Background Images	41.4%	15.1%	
Public Relations Pages	9.7%	5.3%	
Press Releases	3.5%	11.8%	
Telescope Home Pages	5.5%	4.6%	
ISOON	2.3%	0.7%	
Adaptive Optics Pages	0.8%	3.1%	
General Information	8.2%	3.7%	
Staff Pages	0.9%	4.5%	
Other	11.8%	5.6%	

B. NSO/Tucson

- Most recent complete quarter (01 October 31 December 2003)
 - 1. 661 FTP users
 - 2. 49,613 FTP logins
 - 3. 220,044 files downloaded via anonymous FTP
 - 4. 171,431 Web page hits (not counting in-line images)
 - 5. 1,602,404 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. 10% FTS (spectral atlases, general archive).
 - 3. <1% Sac Peak spectroheliograms (Hα, Calcium K images).
 - 4. 87% 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

Research Experiences for Undergraduates (REU) and Research Experiences for Teachers (RET)

More than 700 announcements on the 2004 NSO REU program were direct mailed to U.S. colleges and universities that support astronomy, physics, engineering, mathematics and natural science undergraduate programs. The list includes colleges from the Historically Black College List generated by the National Science Foundation and a list of American Indian Science and Engineering Society Affiliates. An announcement about the 2004 NSO RET program was widely distributed electronically via the National Astronomy List Serves, Arizona Physics Teachers List Serves and the Arizona Science and Math Education Center; announcements were also sent to school districts throughout New Mexico and in Tucson.

2. Further Undergraduate and Graduate Outreach

During October through December, K. S. Balasubramaniam conducted a weekly three-hour course on spectroscopy and radiative transfer for graduate students at the New Mexico Institute of Technology.

Dr. Balasubramaniam's graduate student at Utah State University, David Byers, successfully defended his doctoral thesis in early December on "Chromospheric Precursor Signatures of Solar Flares."

Matt Penn worked with two University of Arizona (UA) undergraduate students during the Fall quarter. Jill Gerke was a data aide for ATST site survey data analyses. A co-authored paper, "Extinction and Sky Brightness at Two Solar Observatories," covering work done since Spring of 2003 (with Drs. M. Penn, H. Lin, and F. Hill, and another UA undergraduate, Ali Schmidt), was submitted to Solar Physics. UA junior, Sarah Jaeggli, continues as a data aide with Dr. Penn, doing IR data analyses and working toward presenting a poster paper at the May/June 2004 Solar Physics Division meeting of the AAS in Denver.

Educational Outreach Officer Dave Dooling visited the Space Studies Department of the University of North Dakota (UND), Grand Forks, by invitation on October 13. He delivered a lecture (as part of a space studies colloquium) on solar astronomy and talked with faculty members about how to include more solar physics in the UND Master's of Science in Space Studies program. The lecture was taped for use by students in later semesters. The talks and an earlier visit led to an invitation for NSO to provide a chapter for a new book on observational astronomy that UND Professor Paul Hardersen will produce for Columbia University Press.

On November 6, Mark Giampapa presented a one-hour lecture on "Solar/Stellar Variability and Global Climate Change" in University of Arizona Prof. Uwe Fink's undergraduate honors course on The Science and Politics of Global Warming.

As part of his on-going collaboration with a group at Gettysburg College on Project CLEA (Contemporary Laboratory Experiences in Astronomy), Jeff Sudol prepared a second set of 375 GONG intensity images in November (covering the period May 1, 2002 - August 31, 2002) for the CLEA Solar Rotation Lab.

3. Other Educational Outreach

K. S. Balasubramaniam (Bala) presented a poster on the "Synergy of Solar Physics Research and Education Programs" at the Fall meeting of the American Geophysical Union in San Francisco. The poster, which was part of a special education session focusing on the education and public outreach activities directly associated with funded scientific research, generated a lot of attention. Bala handed out small reprints of the poster and other materials on NSO.

Irene Gonzalez-Hernandez and Kerri Donaldson-Hanna participated in the Project ASTRO Workshop in Tucson on October 3-4.

Steve Keil visited the Department of Physics and Astronomy, New Mexico State University (NMSU), Las Cruces in November and presented a seminar to students and faculty on the Advanced Technology Solar Telescope. He also gave a talk about solar research to an adult education group at the NMSU-Alamagordo.

In October, Mark Giampapa spoke to a 2nd grade class at Fruchthendler Elementary School in Tucson on "Stars, Sun and Telescopes," and co-hosted a Star Party in November for the 5th grade classes at Fruchthendler.

4. Plans for Next Quarter

New outreach concepts were developed during the ATST construction phase proposal preparation process this quarter. During the next two (Winter and Spring) quarters, the ATST Educational and Public Outreach (EPO) team will flesh out these ideas with the aim of developing them for delivery through, and in support of, existing EPO activities (TLRBSE, Project ASTRO, etc.). Each will be used to highlight the need for detailed studies of our Sun through the ATST. The concepts are:

- Max 2008, activities focused on the Cycle 24 solar maximum in 2007-08, the International Heliophysical Year in 2007, and the centennial of Hale's discovery of magnetism in sunspots in 1908.
- Other Suns for Other Worlds, a program to connect nighttime astronomy with the Sun, specifically by exploring concepts for determining what stars would be most hospitable for life.
- *The Sun on Wheels*, an education van outfitted to take current and future educational materials to schools, including telescopes for students to observe the Sun. This recognizes that not all schools have high bandwidth access to the Web, and the fact that an outside visitor gets more attention from students as well as easing the workload on teachers.

Jackie Diehl is developing "camp-in" educational opportunities for youth groups (primarily aimed at grades K-12) at the observatory.

B. Public Outreach

1. Sunspot Visitor Center

Sunspot Astronomy & Visitor Center Summary of Visitors and Tours		
(3 Months Endin	g 12/31/03)	
Group/Program	No. of Visitors	
General Public Tours		
(Visits to Center and		
Self-Guided Tours)	2,971	
Guided Public Tours:	·	
- School Groups K-12	120	
- Special Tours	15	
Total Visitors	3,106	

2. Other Public Outreach

Mark Giampapa and Dave Dooling represented the NSO at an NSF-sponsored public symposium on the future of ground-based astronomy, "Universe from the Ground Up," held October 7-8 in Washington, D.C. NSO hosted an exhibit booth and NSO Deputy Director Giampapa presented a talk, "Our Sun – A New Era of Discovery," highlighting the Advanced Technology Solar Telescope (ATST).

Dave Dooling met with outreach officers at the Lodestar Planetarium, Albuquerque, in November to discuss NSO support of Sun-Earth Day and Astronomy Day events. NSO and Lodestar also are planning public lectures on solar activities and on ATST. Dooling also had discussions with the Franklin Institute, Philadelphia, about teaming with the Institute in a planned proposal to develop a planetarium show on the Sun. The proposal would be submitted in March 2004 with development, if funded, in late 2004.

Jackie Diehl distributed NSO brochures in a joint effort with the Alamogordo Astronomy Club at a "Downtown Christmas" telescope exhibit on December 5, in Alamogordo, New Mexico.

3. External Coordination

Dave Dooling met with Dr. Evelina Felicite-Maurice, Outreach Director for the Living With a Star (LWS) program at NASA's Goddard Space Flight Center, to determine how NSO can best contribute to, and benefit from, the program. An application letter is being developed for submission in early 2004. He also met with animators in the Goddard Science Visualization Studio to discuss possible development of solar physics animations.

Dooling attended the Conference on Communicating Astronomy to the Public held October 1-3 at the National Research Council in Washington, D.C. He is participating in one of the ad hoc committees formed to simplify the problems faced by teachers in locating scientifically sound resources on the Web.

Jackie Diehl and Dave Dooling participated in the semi-annual meeting of the Southwest Consortium of Observatories in Public Education (SCOPE) held in November in Sunspot, and Ramona Elrod, Rex Hunter, and Diehl, plus volunteers from the Apache Point Observatory, staffed an NSO exhibit at Southern New Mexico State Fair, October 3-5.

On October 23, Mark Giampapa gave a talk to an amateur solar observing group at the conference on "Hands on the Sun" in Tucson.

C. Media and Public Information

1. Press Releases and Image Releases

NSO issued five press releases with a total of 11 images and one MPG:

- December 18, 2003: "Peering into the Heart of a Storm." First observations by combined adaptive optics (AO) and diffraction-limited spectropolarimeter (DLSP) of umbra of sunspots during the October 2003 solar activity.
- December 8, 2003: "Three Sites Selected as Candidates for World's Largest Solar Telescope." Site selection announcement for ATST.
- November 11, 2003: "ATST Interim Site Survey Report Released."
- October 30, 2003: "Sun Acts Up on Its Way to a Quiet Time." Story with images by the SOLIS/Vector spectromagnetograph (VSM), Improved Solar Observing Optical Network (ISOON), and Solar Mass Ejection Imager (SMEI).
- October 27, 2003: "Two Major Sunspot Regions Viewed from Kitt Peak, AZ." Release with highresolution images by the McMath-Pierce Solar Telescope.

NSO/Sac Peak was visited by two reporters, John Fleck of the Albuquerque Journal (with photographer Richard Pipes), and Krista West on assignment for StarDate and for Scientific American. Fleck wrote an article that ran in November, profiling NSO and Air Force Research Laboratory work in tracking and studying solar active regions. Fleck was also preparing an article on drawing sunspots.

In connection with the significant solar activity in late October, Jack Harvey was interviewed by several news organizations. Reports quoting Harvey appeared in the *Tucson Citizen* (front page), *Christian Science Monitor*, *Arizona Daily Star*, and the *San Francisco Chronicle*. Mark Giamapapa and Bill Livingston were also interviewed and quoted in the *Arizona Daily Star* and *Tucson Citizen*, respectively, concerning the strong magnetic and flare activity on the Sun

The Air Force Research Laboratory team developed a Web page to post Solar Mass Ejection Imager images as they arrive from the spacecraft.

2. Special Information Products

A 20-page booklet on the ATST project was completed at the end of December and released for printing in early January 2004. The booklet describes the need for ATST, including the science that will be accomplished with the facility.

The first drafts of a trifold and a fact sheet on SOLIS were produced, with release planned for Spring 2004 at the AAS Solar Physics Division meeting in Denver, and when SOLIS is dedicated at Kitt Peak.

The full-color visitor's trifold for Sunspot was updated and submitted for printing and availability in early 2004. The 11×17 visitor's walking tour guides for Sunspot were rewritten and redesigned to include a better map of the site and reflects the addition of ISOON. Further, a companion "quick guide to the Sun" was produced. A "Pre-Visit Tour Guide" is being developed and prepared for mailing to schools/groups prior to their visit to Sunspot. This guide will be completed by March 1, 2004.

3. Web-Based Outreach

The stories listed under Press Releases were posted to the Web along with high-resolution images and a large MPG file.

4. Image Requests

NSO responded to several requests from the *Albuquerque Journal*, *StarDate*, and *Scientific American*, as well as a request from the German astronomy magazine *Sterne und Weltraum*. NSO also provided six images that NSF posted as part of the image gallery associated with the Universe from the Ground Up event.

Plans are being developed by Dave Dooling for a Web-based catalog of NSO-related images, especially ATST images, that would be easily searched by the media and educators.

V. Safety Report

A. OSHA Recordable Occupational Injuries and Illnesses

 Injury and illness record keeping requirements as mandated by OSHA for the calendar year of 2003 was completed and finalized. During this quarter, no recordable injuries occurred at Sacramento Peak. However, NOAO and NSO Tucson experienced two OSHA recordable injuries and Kitt Peak experienced one OSHA recordable injury.

B. Safety and Health

- Eighteen Tucson employees representing Kitt Peak Support, Instrument Makers, Electrical Technicians Central Facilities and the National Solar Observatory attended the Tucson on-site eight-hour Crane and Rigging course on November 10. The seminar was followed by an inspection of hoisting equipment in the Instrument Shop and the Optics Shop. NSO staff who participated in this course were Joe Elrod, Scott Long, and William Rogers.
- A contract was established with a vendor that will aid NOAO and NSO with the compliance of OSHA's 29
 CFR 1910.134 Respiratory Protection Standard. The service includes review of employee confidential
 Respiratory Protection Medical Forms by a physician or licensed health care professional, follow up medical
 examination if required, and providing respirator fit testing.

Other risk management activities completed in the first quarter:

- NSO staff member Roy Schimming attended the New Mexico Fire Service Conference in Albuquerque, New Mexico, 12-15 November.
- For calendar year 2003, NOAO and NSO Tucson and Kitt Peak will report to the Arizona Department of Environmental Quality as a conditionally exempt small quantity generator because the organization properly relocated and disposed of hazardous materials and universal wastes.

Risk Management services at NSO/Kitt Peak and Tucson are shared with NOAO. See also the "Tucson and Kitt Peak Safety Report" section of the NOAO October-December 2003 Quarterly Report for additional details on risk management activities.

APPENDIX

National Solar Observatory 01 October - 31 December 2003

October - December 2003: During this period, 28 observing programs, three of which were thesis programs, were carried out at the National Solar Observatory. Graduate and undergraduate students are indicated by a (T) for thesis students, (G) for non-thesis graduate students, (UT) for undergraduate thesis students; and (U) for undergraduate students.

		Nights	Days	Hours
8		0.0	2.0	13.0
Michael Dulick	National Solar Observatory			
FTS Beamsplitter Char	nges			
McMP FTS Lab				
1222		0.0	13.0	97.5
Curtis Rinsland	NASA Langley Research Center			
Monitoring of Long-Te	erm Trends in the Concentrations of Atmospheric	Gases from McM	ath FTS Sol	ar Spectra
1661		0.0	10.0	105.5
Linda Brown	Jet Propulsion Laboratory			
Miller	Haverford College, Dept. of Chemistry			
Laboratory Infrared Sp McMP FTS Lab	oectroscopy			
1858		0.0	10.0	208.0
William Livingston	National Solar Observatory			
Cycle Variability of the	-			
McMP Main spectrogr	aph			
1948		0.0	3.0	37.5
Peter Bernath	University of Waterloo			
Ram	University of Arizona			
Laboratory Spectroscop	py of Molecules Found in the Sun			

McMP FTS Lab

		Nights	Days	Hours
1985		0.0	5.0	34.5
T. Alan Clark	University of Calgary			
Bergman	University of Calgary			
	servations of Infrared Lines of HI, MgI and	Other Elements		
McMP Main spectrogra	ph			
2127		0.0	15.3	64.0
Richard Altrock	USAF Research Laboratory			
Three-Line Coronal Ph	otometer			
Evans Facility Sac Peak	ζ.			
2128		0.0	15.3	36.0
Simon Worden	USAF			
Keil	National Solar Observatory			
Ca K Solar Rotation				
Evans Facility Sac Peak	S.			
2141		0.0	12.8	
Steve Hegwer	National Solar Observatory			
Gilliam	National Solar Observatory			
Telescope Maintenance				
Dunn Solar Sac Peak				
2149		0.0	90.0	314.0
Archives	National Solar Observatory	0.0	70.0	314.0
Flare Patrol: Daily/Con	mmunity			
Hilltop Dome Sac Peak				
2150		0.0	91.0	316.0
Archives	National Solar Observatory	3.0	2 	2 2 2 3 3
White Light Patrol: Dai	ly/Community			

Hilltop Dome Sac Peak

		Nights	Days	Hours
2151		0.0	7.0	32.0
Archives	National Solar Observatory			
Sunspot Drawing: Da	ily/Community			
Hilltop Dome Sac Peal	k			
2245		0.0	10.0	24.0
Christoph Keller	National Solar Observatory	0.0	10.0	24.0
ATST Key Technology	n Develonments			
McMP Main spectrogr	_			
2316		0.0	5.0	28.0
Stephen Walton	California State University, Northridge	0.0	3.0	20.0
Chapman	California State University, Northridge			
Penn	National Solar Observatory			
CSUN-NSO IR Polari	meter Observing - I			
McMP Main spectrogr	raph			
2320		0.0	5.0	21.0
Thomas Ayres	University of Colorado, CASA			
Pushing the Resolution	n Envelope in the Thermal IR			
McMP Main spectrogr	raph			
2327		0.0	0.3	2.0
Thomas Rimmele	National Solar Observatory			
Richards	National Solar Observatory			
A076 Integration & So	cience			
Dunn Solar Sac Pea	k			
2365		0.0	14.0	93.0
Daniel Wirtz	University of Cologne/KOSMA			
Vetterle (T)	University of Cologne/KOSMA			
Sonnabend	University of Cologne/KOSMA			
Fast (T)	University of Maryland, Dept. of Astronomy			
Schieder	University of Koln			
Ozone Absorption Med	usurements in Mars/NH3 in IRC+10216			

McMP Main spectrograph

		Nights	Days	Hours
2365n		14.0	0.0	93.0
Daniel Wirtz				
Vetterle (T)	University of Cologne/KOSMA			
Sonnabend	University of Cologne/KOSMA			
Fast (T)	University of Maryland, Dept. of Astronomy			
Schieder	University of Koln			
	surements in Mars/NH3 in IRC+10216			
McMP Main spectrogra	ph			
2366		0.0	4.0	33.0
Drake Deming	NASA/Goddard Space Flight Center			
Plymate	National Solar Observatory			
The Apparent Velocity of	of Integrated Sunlight			
McMP FTS/Mc-P				
2367		0.0	5.0	54.0
Andrew Potter	National Solar Observatory			
Plymate	National Solar Observatory			
Adaptive Optics for Plan	netary Observations at the McMath-Pierce Telescope	?		
McMP Main spectrogra	ph			
2368		0.0	9.0	78.0
Sankarasubramanian	National Solar Observatory			
Gullixson	National Solar Observatory			
Hegwer	National Solar Observatory			
Gullixson	National Solar Observatory			
Gregory	National Solar Observatory			
Diffraction-Limited Spe	ctro-Polarimeter (DLSP) Phase II Engineering			
Dunn Solar Sac Peak				
2383		0.0	6.6	58.0
Yan Xu (T)				-
Wenda	New Jersey Institute of Technology			
Wang	New Jersery Institute of Technology			
High-Resolution Obser	vations of Fine Structures in Active Regions			

Dunn Solar

Sac Peak

		Nights	Days	Hours
2384		0.0	9.5	19.0
Roberto Falciani	University of Florence			
Cavallini	INAF - Arcetri Astrophysical Observatory			
Cauzzi	Osservatorio Astrofisico di Arcetri			
Reardon	INAF - Arcetri Astrophysical Observatory			
Falchi	Osservatorio Astrofisico di Arcetri			
-	ligh Spatial Resolution with the Interferometric B	Idimensional .	Spectrometer	(IBIS)
Dunn Solar Sac Peak				
2385		0.0	5.5	43.0
Francesco Berrilli	University of Rome "Tor Vergata"			
Del Moro (T)	University of Rome "Tor Vergata"			
Cavallini	INAF - Arcetri Astrophysical Observatory			
Righini	University of Florence, Dept of Physics			
Penza	University of Rome "Tor Vergata"			
Convective Velocity Fields	s at the Basis of the Photosphere with the Interfer	ometric BIdim	ensional Spe	ctrometer
Dunn Solar Sac Peak				
0000		0.0	140	70. 0
2386	H	0.0	14.9	59.0
Haosheng Lin	University of Hawaii, IFA			
Rimmele	National Solar Observatory			
Penn	National Solar Observatory			
Kuhn	University of Hawaii			
High-Resolution IR Spect	ropolarimetry with Integrated Field Unit (IFU) at	nd High-Order	Adaptive Op	tics (HOAO)
Dunn Solar Sac Peak				
2387		0.0	11.0	58.0
Craig DeForest	Southwest Research Institute	U•U	11.0	30.0
Hassler	Southwest Research Institute			
Trassici	Southwest Research Institute			
Dunn Solar Sac Peak				
2388		0.0	13.3	57.0
Klaus Hartkorn	New Jersey Institute of Technology	V•V	10.0	57.0
Rimmele	National Solar Observatory			
Tammere	Than One Cost Tatoly			

High-Resolution Magnetograms of Sunspots

Dunn Solar Sac Peak

		Nights	Days	Hours
2389		0.0	8.1	55.0
Alessandro Cacciani	Universita "La Sapienza"			
Balasubramaniam	National Solar Observatory			
Pevtsov	National Solar Observatory			
Altrock	USAF Research Laboratory			
Spence	National Solar Observatory			

Search for Alven Waves in and around Sunspots

Dunn Solar Sac Peak