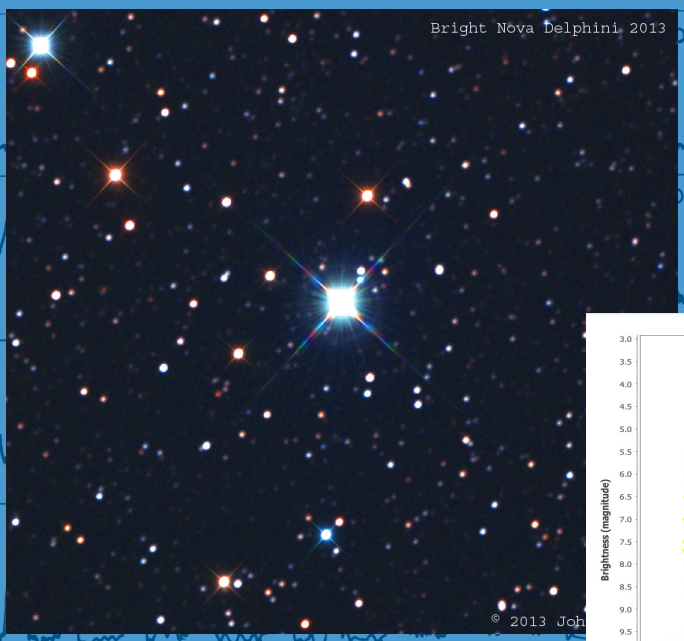

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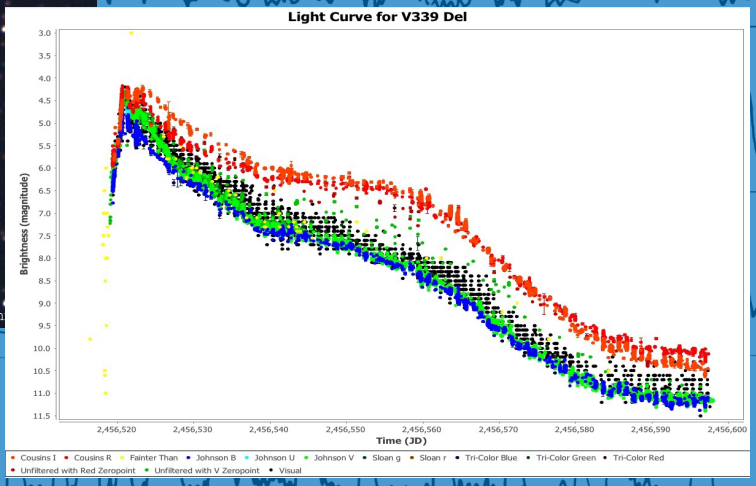

The American Association of Variable Star Observers

THE AMERICAN ASSOCIATION OF VARIABLE STAR OBSERVERS
FOUNDED 1911

Annual Report 2012–2013

The American Association of Variable Star Observers

AAVSO

Annual Report 2012–2013

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http://www.aavso.org/annual-report

On the cover...

An AAVSO light curve and image of the fast nova V339 Del = Nova Del 2013. Between August 14, 2013 and October 31, 2013, 392 observers worldwide have contributed 30,477 observations to this light curve. N Del 2013 image courtesy of John Chumack (www.galacticimages.com).

Picture credits

In additon to images from the AAVSO and its archives, the editors gratefully acknowledge the following for their image contributions: Glenn Chaple, John Chumack, Shawn Dvorak, Mary Glennon, Bill Goff, Barbara Harris, Mario Motta, NASA, Gary Poyner, Msgr. Ronald Royer, the Mary Lea Shane Archives of the Lick Observatory, Chris Stephan, and Wheatley, et al. *2003,* MNRAS, *345, 49.*

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1. About the AAVSO

Participants in the AAVSO's 102nd Annual Meeting, 2013

AAVSO Vision

Discovering the Universe through variable stars.

The AAVSO's Mission

The AAVSO is an international non-profit organization of variable star observers whose mission is to enable anyone, anywhere, to participate in scientific discovery through variable star astronomy. We accomplish our mission by carrying out the following activities:

- observation and analysis of variable stars
- collecting and archiving observations for worldwide access
- forging strong collaborations between amateur and professional astronomers
- promoting scientific research, education, and public outreach using variable star data.

About the AAVSO

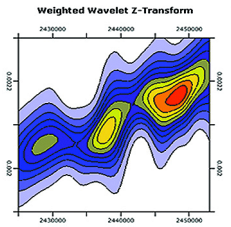
The American Association of Variable Star Observers (AAVSO) is a non-profit worldwide scientific and educational organization of amateur and professional astronomers who are interested in stars that change in brightness—variable stars.

The AAVSO was founded in 1911 to coordinate variable star observations—made largely by amateur astronomers—for Harvard College Observatory. The AAVSO was incorporated in the Commonwealth of Massachusetts in 1918 as a non-profit scientific and educational organization. Today, as an independent, private research organization headquartered in Cambridge, Massachusetts, with active participants in 108 countries, and an archive of over 24 million variable star observations, it is the world's largest association of variable star observers.

Membership in the AAVSO is open to anyone—professionals, amateurs, and educators alike—interested in variable stars and in contributing to the support of valuable research.

Professional astronomers have neither the time nor the telescopes needed to gather data on the brightness changes of thousands of variables, and amateurs make a real and useful contribution to science by observing variable stars and submitting their observations to the AAVSO International Database.

What We Do

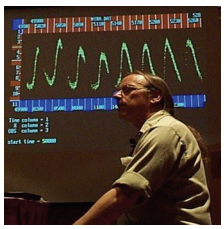


The AAVSO coordinates, evaluates, compiles, processes, publishes, and disseminates variable star observations to the astronomical community throughout the world.

Observers send their data to Headquarters, where they are checked, processed, and added to the AAVSO International Database. The AAVSO and its observers frequently provide the professional community with archival data, intensive monitoring of interesting variable stars, and target-of-opportunity event notification for coordinated observing campaigns and satellite observations.

AAVSO publications provide the astronomical community with valuable information. The type of published information is diverse, and includes *The Journal of the AAVSO*, a peer-reviewed collection of scientific papers focused on variable stars, the *Manual for Visual Observing*, now available in thirteen languages, the *CCD Observing Manual*, the quarterly *AAVSO Newsletter*, the *Eclipsing Binary and RR Lyrae Ephemerides*, and the *AAVSO Annual Report*.

Additionally, the AAVSO is actively involved in education and outreach. We have several programs designed to assist with disseminating information to educators and the public.



The AAVSO has an active Mentor Program that is available to any observer requesting personal instruction in observing techniques and methods.

The Speakers Bureau is a service established for people and groups looking for enthusiastic, knowledgeable speakers.

Our Presentation Library offers free POWERPOINT™ presentations on variable stars, observing techniques, and other astronomical topics.

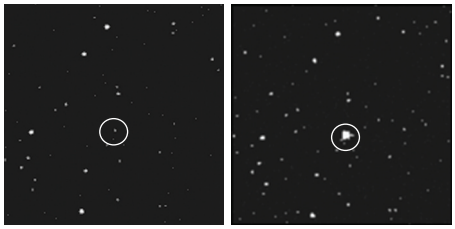
Our Writers Bureau offers variable star and topical astronomy content on a monthly basis to editors of astronomy club and society newsletters.

Variable Star Astronomy (VSA) is a flexible set of hands-on educational materials, activities, and investigations, based on the AAVSO's unique electronic database of variable star measurements.

Members and observers have a unique opportunity to present and exchange ideas at the AAVSO meetings. The AAVSO organizes two meetings a year, one in the fall and one in the spring. The fall meeting is the official AAVSO annual meeting that is always held at or near the AAVSO Headquarters in Cambridge, Massachusetts. The spring meeting is held outside of the state of Massachusetts with the intention of attracting more members and observers to attend. Everyone interested in the AAVSO and its activities is invited and encouraged to participate in these exciting events.

What Are Variable Stars?

Variable stars are stars that change brightness. The brightness changes of these stars can range from a thousandth of a magnitude to as much as twenty magnitudes over periods of a fraction of a second to years, depending on the type of variable star. Over 150,000 variable stars are known and catalogued, and many thousands more are suspected to be variable.



The variable star U Geminorum in its faint state (left) and its bright state (right)

There are a number of reasons why variable stars change their brightness. Pulsating variables, for example, swell and shrink due to internal forces. An eclipsing binary will dim when it is eclipsed by a faint companion, and then brighten when the occulting star moves out of the way. Some variable stars are actually extremely close pairs of stars, exchanging mass as one star strips the atmosphere from the other.

The different causes of light variation in variable stars provide the impetus for classifying the stars into different categories. Variable stars are classified as either intrinsic, wherein variability is caused by physical changes such as pulsation or eruption in the star or stellar system, or extrinsic, wherein variability is caused by the eclipse of one star by another, the transit of an extrasolar planet, or by the effects of stellar rotation.

Why Observe Variable Stars?

Variable stars need to be systematically observed over decades in order to determine their long-time behavior. Professional astronomers have neither the available time nor the unlimited telescope access needed to gather data on the brightness changes of thousands of variable stars. Thus, it is amateur astronomers utilizing visual, photographic, photoelectric, and CCD techniques who are making a real and highly useful contribution to science by observing variable stars and submitting their observations to the AAVSO International

Database. These important data are needed to analyze variable star behavior, to schedule satellite observations of certain stars, to correlate data from satellite and ground-based observations, and to make computerized theoretical models of variable stars possible.

Research on variable stars is important because it provides information about stellar properties, such as mass, radius, luminosity, temperature, internal and external structure, composition, and evolution. Some of this information would be difficult or impossible to obtain any other way. In many cases, it is the nature of the variability that provides the clues to the answers. This information can then be used to understand other stars.

Variable stars continue to play a crucial role in our understanding of the universe. Cepheid variables have played a major part in determining distances to far-away galaxies and determining the age of the Universe. Mira variables give us a glimpse into the future evolution of our own star, the Sun. Accretion disks in cataclysmic variables help us to understand larger scale disk behavior, like the activity inside active galaxies with super-massive black holes. Supernovae have led us to the surprising realization that the expansion of the Universe is accelerating. Even the search for extra-terrestrial life is illuminated by variable stars. Transiting extrasolar planets provide clues into the processes of planetary formation, and the very stuff of life as we know it is made of comes from the hearts of stars that explode in the final stages of their evolution.

The AAVSO International Database

The AAVSO International Database has nearly 25 million variable star observations going back over one hundred years. It is the largest and most comprehensive digital variable star database in the world. Over 1,000,000 new variable star brightness measurements are added to the database every year by over 900 observers from all over the world.

Quality

The AAVSO International Database is not only the largest but also the highest quality database available to researchers. The AAVSO and its technical staff spend more time and resources on database maintenance and quality control than any other organization of its kind.

Quality control begins before the observation is even made. Extensive training materials are sent to new AAVSO observers and a large section of the AAVSO website is designed

specifically for observing techniques. We also have a thriving group of volunteers devoted to revising and developing new sequences for variable stars. The AAVSO holds two meetings per year where members come together to discuss their observing strategies, compare results, and much more. Workshops are routinely held at these meetings, bringing the best professionals in the field in contact with the observers. Since 2000, workshops have been held on CCD imaging, Eclipsing Binary star observing, GRB afterglow hunting, data mining, and data analysis. The AAVSO also has an active mentoring program for new observers.

We have data entry error checks at every stage in the process. Our on-line data entry tool WebObs runs error checking routines which automatically identify the most common data entry errors. In addition, every month we review observations using both human scrutiny and automated programs to look for misidentifications, typos, and any other errors. The best check, however, is the observers themselves who check their own submitted data by using the many tools the AAVSO makes available: Light Curve Generator, WebObs Search, and our Zapper application which lets volunteers highlight questionable observations and bring them to the attention of AAVSO staff. All revisions to the database are themselves tracked, and no observation is ever discarded without thorough checking.

Observers

The AAVSO International Database would not exist without the dedication, tireless effort, and enthusiasm of thousands of variable star observers. Our observers come from all over the world. Over two-thirds of AAVSO observers contributing data come from outside of the United States.

Thanks to this broad network of observers we have coverage across most time zones and latitudes regardless of weather or other regional disruptions.

To make it easier for the widely-scattered AAVSO members and observers to gather together in person, the AAVSO meetings held every spring or summer take place in different parts of the United States or, as often as possible, in different countries.

The AAVSO receives observations from members of other variable star observing associations around the world for inclusion in the AAVSO International Database and dissemination to the astronomical community worldwide. These observations are sent regularly by the group leader/representative

Mary Glennon, AAVSO member-observer since 1999

or directly by the group members themselves. The AAVSO values these fruitful, mutually beneficial collaborations, and truly appreciates the ongoing efforts of everyone involved in working together for the benefit of the astronomical community.

Access

Observations from the AAVSO International Database are available to anyone at anytime, a free resource for the global scientific community. For raw observations, simply fill out our online request form. For access to light curves, use our Light Curve Generator which works in all browsers (you do not need JAVA or any special plug-ins), and for really quick access to recent data, use the QuickLook utility on our website. Our online systems are instantly updated every time data are submitted to the AAVSO.

Observing Variable Stars

Astronomy is a unique science that cannot be studied in a typical laboratory setting here on Earth. Instead, astronomers turn their attention and telescopes to the sky in order to study their subjects. Since professional astronomers often do not have the telescope time needed to follow a particular star or group of stars, the dedication of amateur astronomers is often an invaluable means of collecting information. Nowhere is this more true than in the field of variable star astronomy. Since 1911, thousands of amateur astronomers from all over the world and from all backgrounds have contributed observations, one at a time, to make up the over 24 million data points housed in the AAVSO International Database!

Anyone can be a variable star observer. All you really need to begin observing are:

- your unaided eyes, a pair of binoculars, or a telescope
- some variable star charts to help you navigate your way through the sky
- some basic instructions
- a little patience

For those interested in observing activity on our closest star, the Sun, or a particular type of variable, such as the Eclipsing Binary or RR Lyrae type stars, or if hunting for novae, supernovae, or optical counterparts to energetic Gamma-Ray Bursts strikes your fancy, we have observing programs designed to help satisfy your appetite.

The AAVSO Mentor Program is available to all observers to assist newcomers in the methods and techniques of visual variable star observation, as well as CCD, PEP, and DSLR observation.

Msgr. Ron Royer, AAVSO member observer since 1953

Services to Astronomy

The AAVSO provides a wide range of services to the astronomical community. AAVSO International Database data are disseminated extensively to astronomers around the world, upon request, and are freely available from the AAVSO website. AAVSO data and services have been used, referenced, and acknowledged in hundreds of professional astronomical publications.

Mario Motta, M.D., AAVSO President, and an AAVSO member-observer since 1985, at his 32-inch telescope in Gloucester, Mass.

Services to Astronomers

AAVSO services are sought by astronomers for the following purposes:

- real-time, up-to-date information on unusual stellar activity
- scheduling of variable star observing programs coordinating earth-based large telescopes and instruments aboard satellites
- simultaneous optical observations of program stars and immediate notification of their activity during earth-based or satellite observing programs
- correlation of AAVSO optical data with spectroscopic, photometric, and polarimetric multi-wavelength data
- collaborative statistical analysis of stellar behavior using long-term AAVSO data

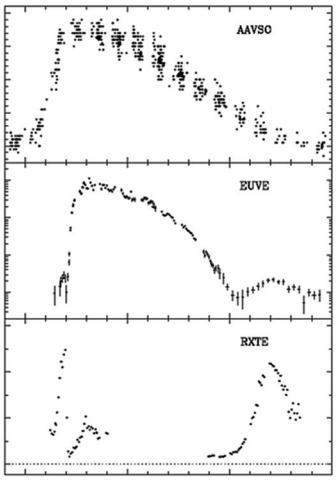
Collaboration between the AAVSO and professional astronomers for real-time information or simultaneous optical observations has enabled the successful execution of hundreds of observing programs using satellites such as:

- Hubble Space Telescope
- Chandra X-Ray Observatory
- Spitzer Space Telescope
- XMM-Newton X-Ray Observatory
- Extreme Ultraviolet Explorer
- High Energy Astronomical Observatories 1 and 2
- International Ultraviolet Explorer
- Roentgen Satellite
- European X-Ray Observatory Satellite
- High Precision Parallax Collecting Satellite (HIPPARCOS)

AAVSO services have been used by researchers affiliated with such satellites as Chandra, XXM, RXTE, FUSE, HST, Spitzer, and many more

A significant number of rare events have been observed with these satellites as a result of timely notification by the AAVSO.

In recent years, the SWIFT satellite has been sending real-time notification to ground-based observers in the AAVSO High-Energy Network to alert them of Gamma-Ray Bursts (GRBs). Several GRB optical afterglows have been detected by AAVSO observers. In this way, AAVSO observers are contributing to cutting-edge, high-energy astrophysics.

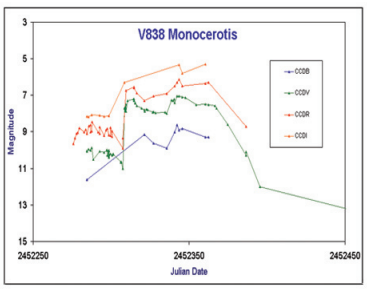


With the outburst detected by AAVSO Observers, simultaneous AAVSO visual, EUVE, and RXTE observations of SS Cygni were triggered, providing astronomers with important information about the behavior of dwarf novae (from Wheatley et al. *2003, MNRAS, 345, 49)*

Services to Observers and Members

The AAVSO enables variable star observers to contribute vitally to variable star astronomy by accepting their observations, incorporating them into the AAVSO International Database, publishing them, and making them available to research astronomers. Incorporating an observer's observations into the AAVSO archives means that future researchers will have access to those observations, so the observer is contributing to the science of the future as well as the present.

The AAVSO coordinates observing campaigns between professional and amateur astronomers, in which observations from amateur astronomers play an important role in correlating observations obtained with special instruments at earth-based observatories or aboard satellites.



On request, the AAVSO will help set up an appropriate observing program for an individual, an astronomy club, an elementary school, a high school, college, and so forth. In this way observers, students, and faculty are able to make the best use of their resources to do valuable science. The AAVSO can also assist in teaching observing techniques and in suggesting stars to be included in a program through the AAVSO Mentor Program.

Education and Outreach

The AAVSO believes that Education and Outreach are important to our mission:

- to attract, train, and retain new variable star observers and members of all ages
- to increase awareness, understanding, and appreciation of variable star astronomy and variable star observing among amateur and professional astronomers, educators, students, and the general public
- to improve science education and literacy through the unique power of variable stars and variable star observing to motivate students young and old.

Projects, Programs, and Activities

The AAVSO Writers Bureau offers variable star and topical astronomy content on a monthly basis to editors of astronomy club and society newsletters. This gives us the chance to inform the public about the fascinating objects we study, as well as the science and research being done, while providing reliable, accurate information to newsletter editors who may lack the time or expertise to write or vet articles for publication.

The AAVSO has much experience in hosting successful educational lectures such as the series of High-Energy Astrophysics Workshops for Amateur Astronomers

The AAVSO Mentor Program connects experienced observers with new observers to assist them in observing, recording, and reporting observations of variable stars to the AAVSO International Database.

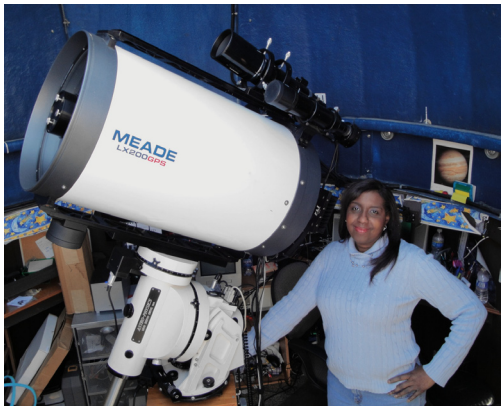
The Speakers Bureau is a service established for people and groups looking for enthusiastic, knowledgeable speakers to provide informative presentations for astronomy clubs, star parties, banquets, Scout Troops, Astronomy Day activities, and other public and private astronomy functions.

Our Presentation Library contains POWERPOINT™ presentations on variable stars, observing techniques, and other astronomical topics. These are available free to the public to use in making your own presentations.

Gary Poyner, AAVSO member-observer since 1991, with his 14-inch telescope

1. About the AAVSO

Variable Star Astronomy (VSA) is an AAVSO educational project, originally developed as *Hands-On Astrophysics* (HOA) with funds from the National Science Foundation. It is a flexible set of hands-on educational materials, activities, and investigations based on the AAVSO's unique electronic database of variable star measurements. Students will be able to experience the excitement of doing real science with real data! By carrying out all aspects of the research process, they can develop and integrate skills in science, math, computing, and other areas. VSA has been converted to a web-based format and is available via the AAVSO website (http://www.avso.org/education/vsa).



On January 28, 2010, AAVSO member-observers Barbara Harris (left) and Shawn Dvorak (right) detected a rare outburst of the recurrent nova U Scorpii, which set in motion satellite observations by the Hubble Space Telescope, Swift gamma-ray satellite, and the Spitzer Space Telescope.

VStar is the Java software that accompanies the activities for VSA. Developed by volunteer David Benn as part of the Citizen Sky project, which had funding from the National Science Foundation, to replace the HOA DOS software, multi-platform VStar has evolved into a very powerful yet easy-to-use variable star data visualization and analysis tool. Data for a star can be read from the AAVSO database, from a text file of your own creation, or from other databases via a plug-in.

Glenn Chaple, AAVSO member-observer since 1980

Bill Goff, an AAVSO observer since 1981. His telescope is a Planewave 20" CDK with an Apogee U9 camera.

Chris Stephan, AAVSO member-observer since 1975

2. The Year in Review

Introduction

This year, the AAVSO held two major meetings, the Spring Meeting in Boone, North Carolina, and the Annual Meeting in Woburn, Massachusetts. The 102nd Spring Meeting was held May 17–18 at Appalachian State University, and the Spring Council meeting was held May 16. The 102nd Annual Meeting was held October 11–12 at the Woburn-Hilton Hotel, and the Annual Council meeting was held October 10.

Minutes of the 102nd Spring Meeting of the AAVSO, Held May 16–18, 2013, Boone, North Carolina

Gary Walker, Secretary

Thursday, May 16, 2013—Council meeting

The Council met at the Boone Holiday Inn Express. Along with the ordinary business items including the Secretary's Report and the Treasurer's Report, the agenda included a short version of the Director's Report to the Membership that was to be given at the Membership Meeting.

In his Grants report, Director Arne Henden reported that we had not been awarded any new grants. Five grant proposals were still active; no decisions have been made regarding any of them. The effects of Sequestration were affecting these potential awards as well as those to the whole astronomical community. Donna Young's Chandra grant is funded by mission EPO funds and is not expected to be affected.

The Director's Semiannual Report to Council included details regarding membership, observation totals for the AAVSO International Database, updates on AAVSOnet assets and their deployment, Bright Star Monitor (BSM) projects, APASS progress, outcomes from recent travel, future travel plans, observing campaigns, the next Janet Mattei Fellow, and the AAVSO CCD School scheduled for July 2014.

Treasurer Tim Hager presented the Treasurer's Report, which included the current totals for the endowment ($13.089 million/end April), operational expenses at $733 K versus

the year-end plan of $1.399 million. He also reported the current paid membership count at around 1,050.

Dr. Arne Henden presented a status report on 2GSS (2nd Generation Sky Survey, formerly PSSST (Photometric Small Synoptic Survey Telescope)): the spherical aberration in the first telescope has not yet been resolved by the camera supplier, and the second telescope was delivered in December 2012. This project, which is funded by The Ayers Research Organization, will provide nightly coverage of the entire sky down to magnitude 17 in V and I.

The Director reiterated the benefits of AAVSOnet, the AAVSO's global network of robotic telescopes. The opportunities the various aspects of AAVSOnet provide include training for our non-professional astronomical staff, a research facility for professional staff, an experimentation facility, demonstration to the outside community of the value of small telescopes, a means to enable visual members to try CCD observing without making a financial investment, and members' use of research-grade facilities at no cost. Since it is run at no cost to HQ, volunteers and donations are key. The Director noted that, as an indication of the success of APASS (AAVSO Photometric All-Sky Survey) and AAVSOnet, the U.S. Naval Observatory included APASS data in its *Fourth United States Naval Observatory (USNO) CCD Astrograph Catalog* (UCAC4). UCAC4, published in 2012, is a high-density, highly accurate astrometric catalogue of over 113 million stars covering the entire sky, providing multicolor photometry, including values from APASS Data Release 6, for all stars, and proper motions for over 105 million stars.

Dr. Arne Henden reported that many of our tools, particularly the Variable Star Index (VSX), Light Curve Generator (LCG), and VPHOT are in need of support. The first two are just showing their age and need updating, while VPHOT has been a volunteer effort by its creator, Geir Klingenberg, who now has new duties and is finding it increasingly difficult to provide support. Arne agreed to work on a plan to address these items.

The council also voted to make the theme of the 2013 Annual Meeting the issues dealing with Large-Scale Astronomical Surveys and how AAVSO should support them.

Council also discussed Budget options. We are seeing the effects of the five-year rule and 2014 will be a difficult year. Options were presented and Council gave a sense of their reaction to each of the items.

The Council meeting was adjourned at 6:30 p.m. by President Mario Motta.

Thursday, May 16, 2013—Dinner for New Meeting Attendees

The Spring meeting started on Thursday evening with a dinner for new meeting attendees and AAVSO staff. Those AAVSOers attending their first AAVSO meeting had the chance to meet some of the AAVSO staff and vice versa before the full meeting began. This way the new attendees would know some of the friendly faces they would encounter the next morning and who to ask logistical questions of during the meeting, and the staff would have a better idea of the interests of the first-timers so they could facilitate their connecting with like-minded experienced attendees.

Friday, May 17, 2013

After a complimentary hot breakfast at the hotel in Boone, attendees were transported by shuttle buses to the Chemistry, Astronomy, and Physics Building at Appalachian State University. After registration, the meeting was opened at 9 a.m. by our host, ASU Dark Sky Observatory Engineer Lee Hawkins. Three scientific paper sessions were held during the day. Dan Caton spoke on "The Astronomer Who Came in from the Cold: The Evolution of Observing Variable Stars Over Three Decades at ASU's Dark Sky Observatory," Matthew Templeton on the "AAVSO High-Energy Network: Past and Present," Jeno Sokoloski on "Working Together to Understand Novae," Gary Walker on "Kalman Filtering and Variable Stars," Mike Simonsen on the "Z CamPaign Year Four," and Arne Henden on "Late-time Observations of Novae."

The scientific paper sessions were followed by a very interesting and impressive tour of the ASU GOTO Astronomy Laboratory, which, with its sixteen large, fork-mounted Celestron telescopes and other equipment, is an amazing on-campus student resource.

The spring meeting attendees inspect ASU's battery of Celestrons and other equipment

Nothing had been officially scheduled for Friday evening, but during the day it was realized that the newest Star Trek film, "Into Darkness," was opening in Boone that night. The college vans were drafted, and the crowd trouped to a Mexican restaurant for dinner and then to the theater to enjoy an evening of stellar entertainment.

Saturday, May 18, 2013

After shuttling to the Chemistry, Astronomy, and Physics Building, the Membership Meeting was called to order at 9:30 a.m. and a warm welcome was given by Rebecca Turner. Gary Walker gave the Secretary's Report and Tim Hager gave the Treasurer's Report, which were approved. Director Arne Henden reported on deceased members and friends of the AAVSO: Len Abbey Jr., Martha Stahr Carpenter, Frederick E. Ellis Sr., Douglas Hall, Samuel Hellenbrand, Dale Kinne, Edwin Hubert Morris, Jorge Sahade, William Shawcross, Giovanni Sostero, and Arline Otto Waagen. The membership stood for a moment of silence.

Director Arne Henden gave his Semiannual Report to the Membership, reporting that we were in the middle of another excellent year. As of this meeting, there were 23.5 million observations in the AAVSO International Database and that number is increasing at 1.5 million observations per year. Currently, about 25% of the observations are visual and 75% are CCD. Arne reported that we have about 1,050 members who have paid their current dues, not including those that have been carried even though they did not pay in the past.

Arne then reported that we have five AAVSOnet telescopes online (W30, OC61, TMO61, BSM-South, and SRO); some others which had been online, such as BSM, are being installed in their new locations and will be back online as soon as possible.

The Spring meeting attendees

AAVSO awards were announced by Arne, with AAVSO Variable Star Observer Awards to 74 AAVSO observers worldwide. Shawn Dvorak was present to receive his award for contributing over 400,000 CCD observations. Arne then presented the AAVSO Director's Award for 2013 to John Gross, Manager of Sonoita Robotic Observatory, for his tireless energy in operating SRO as part of AAVSOnet, upgrading AAVSOnet software there, and for his work on APASS. The Director gave a huge thanks to all the volunteers, hundreds of observers, writers of blogs and forum posts, supporters of the various AAVSO Funds, and members of Council and Headquarters staff. Long-time AAVSO member-observer and former AAVSO officer Marv Baldwin cited Arne Henden for all he has done for the organization, and relayed a big "Thank You," which was soundly echoed by the attendees. The membership meeting was adjourned around noon and a group photo was taken.

Rebecca Turner opened the afternoon scientific paper session at 2 p.m. John Martin spoke on "Periodic Brightness Fluctuations in the 2012 outburst of SN 2009ip," Gary Walker on a multicolor-photometry study of the "Color of the Night Sky", Donald Collins on "Observations of an Eclipse of Bright Star b Per by the Third Star in February 2013," Marco Ciocca on "Datamining the OGLE Database for Eclipsing Binary Stars," David Turner on "Deriving Definitive Parameters for the Long Period Variable S Vul," and Mike Simonsen on "Astronomy: Hobby or Obsession." The paper session was adjourned at 4:30 p.m., after which attendees returned to the hotel.

The weather, which had been hot and steamy, turned wet, and through thunderstorm deluges, attendees traveled by bus up the mountain to the ASU Dark Ridge Observatory for an informal BBQ Banquet (amazingly dry under a large tent on the grounds). While the dining area was prepared via a collaborative effort, a tour of the observatory was given to everyone. Dinner was excellent, enhanced by local brews produced by students in the ASU Fermentation Studies program and generously shared by one of their instructors. Unfortunately, the scheduled after-banquet observing was precluded by the unremitting thunder, lightning, rain, and fog, and everyone was grateful to arrive safely back at the hotel following a nail-biting bus trip down the mountain. The next morning attendees not driving were shuttled back to the Charlotte airport for their flights home. Despite Saturday evening's weather, everyone enjoyed the meeting very much.

Papers and Posters Presented at the 102nd Spring Meeting, Boone, North Carolina, May 16–18, 2013

"The Astronomer Who Came in from the Cold: The evolution of observing variable stars over three decades at Appalachian State's Dark Sky Observatory"
Dan Caton

"Working Together to Understand Novae"
Jeno Sokoloski

"The AAVSO High Energy Network: Past and Present"
Matthew Templeton

"Kalman Filtering and Variable Stars"
Gary Walker

"The Z CamPaign Year Four"
Mike Simonsen

"Late-time Observations of Novae"
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"Periodic Brightness Fluctuations in the 2012 Ouburst of SN 2009ip"
John Martin

"Color of the Night Sky"
Gary Walker

"Observations of an Eclipse of bright star b [not β] Persei by the Third Star in February 2013"
Donald F. Collins

"Data mining the OGLE database for eclipsing binary stars"
Marco Ciocca

"Deriving Definitive Parameters for the Long Period Cepheid S Vulpeculae"
David Turner

"Astronomy: Hobby or Obsession?"
Mike Simonsen

Deceased Members, Observers, and Colleagues

Abbey, Leonard B., Jr., Georgia
Carpenter, Martha E. Stahr, Virginia
Ellis, Frederick E., Washington
Hall, Douglas S., Tennessee
Hellenbrand, Samuel H., New York
Kinne, Dale R., New York
Moore, Sir Patrick, Great Britain
Morris, Edwin H., Alabama
Sahade, Jorge, Argentina
Shawcross, William E., Massachusetts
Sostero, Giovanni, Italy
Waagen, Arline O., Massachusetts

AAVSO Director's Award Recipient

Director Arne Henden presented the AAVSO Director's Award for 2013 to John Gross of Tucson, Arizona, in recognition of his continued support of the Sonoita Robotic Observatory, the key telescope in AAVSOnet. John has contributed his time and money to this project, keeping the system running nearly continuously for over eight years. In addition, John has provided countless hours of volunteer programming time to AAVSOnet, helping many sites through the software integration process, including the two newest telescopes (OC61 and TMO61).

John Gross (GQJ) received the AAVSO Director's Award

AAVSO Observer Awards (presented or announced at the ***102nd Spring Meeting, Boone, North Carolina, May 16–18, 2013***

Award/recipient	*Affiliation***	*Country*	*Interval*	*Total*
Over 125,000 Visual Observations*				
Peter Williams	29	Australia	1989–2011	134,630
Over 50,000 Visual Observations*				
Marino Fonovich		Croatia	1991–2012	50,374
Over 25,000 Visual Observations*				
Andrew Pearce	14	Australia	1990–2012	25,764
Adam Derdzikowski		Poland	2003–2012	25,086
Over 10,000 Visual Observations*				
Istvan Tepliczky	03	Hungary	1999–2011	12,597
Thomas Lloyd Evans	20	England	1999–2012	10,312
Bill Wilson		England	1973–2012	10,087
Over 1,000 Visual Observations*				
Larry A. Wade		USA	1999–2011	2,877
Bruno Billiaert	05	Belgium	1997–2012	2,815
Peter Brock		England	2011–2012	2,686
Jean-Louis Fis	01	France	1992–2012	2,651
Anton Khruslov		Russia	2011–2012	1,644
Gustav Holmberg		Sweden	2011–2012	1,369
Jean-Pierre Sciolla	01	France	2009–2012	1,135
Szilard Teichner	03	Hungary	1988–2012	1,133
Angelito D. Sing		Philippines	2007–2012	1,006
Douglas L. Smith		USA	2012–2012	1,003
Over 100 Visual Observations*				
Johan Warell	19	Sweden	2012–2012	724
James Whinfrey		England	2011–2012	385
Chris P. Maloney		USA	2012–2012	314
Glen R. Chapman		USA	2011–2012	278
Jim M. Ketchum		USA	2011–2012	239
Giuseppe M. Bertani		Italy	2011–2012	214

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Observer Awards, cont.

Award/recipient	*Affiliation***	*Country*	*Interval*	*Total*
Nikolaj Stritof		Slovenia	1983–2011	208
Marc-Andre Bedard		Canada	2011–2012	177
Douglas A. Fowler		USA	2012–2012	173
Marcus Jansson		Sweden	2012–2012	139
Robert G. MacPhail		Canada	2012–2012	136
Jon F. M. Brandie		China	2011–2012	132
Jean-Marie Llapassat	01	France	2001–2012	128
Ireneusz Lubiszewski		Poland	2011–2012	120
Richard B. Potter		USA	2004–2012	116
Athanasios Douvris		Greece	2005–2012	112
Over 500,000 CCD Observations*				
Franz-Josef Hambsch	05	Belgium	2002–2012	534,473
Over 400,000 CCD Observations*				
Shawn Dvorak		USA	1981–2012	417,932
Over 200,000 CCD Observations*				
Etienne Morelle	01	France	2005–2012	208,212
Over 100,000 CCD Observations*				
James L. Jones		USA	2003–2012	120,390
Over 50,000 CCD Observations*				
Peter J. Starr		Australia	2005–2012	66,113
Jeremy Shears	20	England	2004–2011	58,596
Colin Littlefield		USA	2009–2012	54,728
James Roe		USA	1972–2012	51,437
Over 10,000 CCD Observations*				
Joseph H. Ulowetz		USA	2010–2011	37,400
Margaret Streamer	29	Australia	2002–2012	25,359
Marlin G. Costello		USA	2009–2012	18,190
Massimiliano Martignoni	18	Italy	2000–2012	16,953
David J. W. Moriarty		Australia	2011–2012	13,868
David Cejudo Fernandez		Spain	2010–2012	13,295

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Observer Awards, cont.

Award/recipient	*Affiliation***	*Country*	*Interval*	*Total*
Kevin Alton		USA	2004–2012	12,648
Timo J. Kantola		Finland	2012–2012	11,123
Gary Poyner		England	1991–2012	10,278
Over 1,000 CCD Observations*				
Ivan Sergey		Belarus	2003–2012	8,849
John W. Rock		England	2012–2012	7,779
Leonid Tkachook		Ukraine	2012–2012	4,149
Juan-Luis Gonzalez Carballo	07	Spain	2001–2012	4,099
James A. Boardman		USA	2012–2012	3,991
John C. Moore	20	England	2009–2011	3,585
Adrianus G. A. Van Der Hoeven		Netherlands	2012–2012	2,930
Robert J. Modic		USA	1994–2012	2,842
Miguel Muro Serrano		Spain	2012–2012	2,649
Gustav Holmberg		Sweden	2012–2012	2,420
Rolf Carstens		New Zealand	2011–2012	1,754
Istvan Kovacs	03	Hungary	1981–2010	1,597
Wolfgang Vollmann		Austria	1976–2012	1,320
Rafael Benavides Palencia		Spain	2007–2012	1,244
David Whelan		USA	2006–2012	1,219
Robert Wahlstrom	19	Sweden	2005–2012	1,142
Robert Riordan		USA	2012–2012	1,117
Marian Urbanik		Slovakia	2012–2012	1,097
Stan Howerton		USA	2007–2011	1,083
Marc Serreau	01	France	2010–2012	1,078
Daniel Zaharevitz		USA	2012–2012	1,019
Over 100 PEP Observations*				
Giorgio Di Scala		Australia	2004–2012	166

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Observer Awards, cont.

* Years include total AAVSO observing interval (not only PEP/CCD/PTG/DSLR observing). Yotal includes only visual or PEP/CCD/PTG/DSLR observations, depending on award.

**These symbols indicate observers are also affiliated with the groups below:

01 Association Française des Observateurs d'Étoiles Variables (AFOEV)
03 Magyar Csillagàszati Egyesület, Valtózocsillag Szakcsoport (Hungary)
05 Vereniging Voor Sterrenkunde, Werkgroep Veranderlijke Sterren (Belgium)
07 Asociacion de Variabilistas de Espagne (Spain)
13 Brazilian Observational Network REA
14 Royal Astronomical Society of New Zealand, Variable Star Section
18 Unione Astrofili Italiani (Italy)
19 Svensk Amator Astronomisk Forening, variabelsektionen (Sweden)
20 British Astronomical Association, Variable Star Section
29 Variable Stars South (New Zealand)

Minutes of the 102nd Annual Meeting of the AAVSO, Held October 11–12, 2013, Woburn, Massachusetts

Gary Walker, Secretary

Thursday, October 10, 2013—Council meeting

The Council met at the Woburn Hilton, courtesy of Councilors Donn Starkey and Roger Kolman, who covered the costs of using the hotel space for the day. Along with the regular business items including the Secretary's Report and the Treasurer's Report, the agenda included a short version of the Director's Report to be given at the Membership Meeting.

The Director's Annual Report to Council included details regarding current membership, observation totals for the AAVSO International Database, updates on AAVSOnet assets and their deployment, a Development report, an update on existing grants and pending proposals, the status of Bright Star Monitor (BSM) projects, current APASS and 2nd Generation Synoptic Survey (2GSS) progress, outcomes from recent collaborations, future travel plans, and many other projects.

Director Arne Henden reported that we were successful in obtaining funding for: a workshop to create a DSLR User's Manual (a Citizen Sky supplemental grant), Jeno Sokoloski's proposal to observe and analyze novae that would involve AAVSO observers and staff, extension through September 2015 of Donna Young's grant for Chandra Education and Public Outreach support, an APASS operating funds grant, and the Las Cumbras Observatory Global Telescope Network (LCOGTN) Red Extension grant for APASS. Additional grant applications are in process.

Treasurer Tim Hager presented the Treasurer's Report. The report included the current totals for the endowment ($12.754 million), and operational expenses at $1,410,791 for the 2013 year. Estimates of Endowment withdrawal for the year were reported at $628K vs. a plan of $620K. Timing issues affected the final numbers, and the Budget Committee is working on this issue and will report at a future meeting.

Mike Simonsen gave the Development Report. He presented the AAVSO's plan for an Annual Campaign. He also reported 79 new members had joined the organization, for a total paying membership of nearly 1,100.

Discussions were held in Council on the: locations of future meetings in the midwest, IRS 990 form, review process for the Director, Investment Committee report, and Programs

Committee report. The number one action item from the Programs Survey sent to the membership was to reduce the error level in the CCD data submitted to the AAVSO International Database. Arne Henden offered to work individually with observers in the V339 Del and XZ Cet campaigns to assess their data and guide them in reducing their error; those who took advantage of this opportunity have already started to improve the scientific value of their data. A full report of nine other prioritized items will be distributed to the membership by the Programs Committee.

The AAVSO Council for 2013–2014: (front row) Kristine Larsen, Mario Motta, Tim Hager, Arne Henden, Jeno Sokoloski, Ed Guinan; (back row) Kevin Paxson, Bob Stine, Donn Starkey, Roger Kolman, John Martin, Gary Walker, and David Turner

Mario Motta gave the report for the Director Search Committee, saying that twelve applications had been received, and that interviews and selection will occur in 2014, with the plan to have the new Director in place by January 2015 to overlap with Arne for two months.

The following officers were elected: Jennifer (Jeno) Sokoloski, President; Jim Bedient, 1st Vice President; Kristine Larson, 2nd Vice President; Tim Hager, Treasurer; and Gary Walker, Secretary.

The Council meeting was adjourned at 6 p.m. by Mario Motta.

Thursday, October 10, 2013—Dinner for New Meeting Attendees

For first-time meeting attendees the Annual meeting started early. On Thursday evening a dinner for new meeting attendees and AAVSO staff was held at a local restaurant. Three AAVSOers attending their first AAVSO meeting had the chance to meet several of the AAVSO staff and vice versa before the full meeting began. Gianluca Rossi, attending from Rome, Italy, had his family with him, which was very nice.

Friday, October 11, 2013

The full Annual Meeting, whose theme was "The Role of Amateur Astronomers in the Age of Large-Scale Surveys," started on Friday morning with Registration and a hot breakfast buffet which was enjoyed by all. Rebecca Turner chaired the four scientific paper sessions, which began at 9 a.m.

Speakers at the Surveys paper session I included Ed Guinan on "Photometry of Bright Variable Stars from Space with the BRITE Constellation Nano-Satellites: Opportunities for Amateur Astronomers to Participate" (invited talk) and Arne Henden on "Using the Transient Surveys."

After a coffee break, Surveys paper session II included speakers Katrien Kolenberg on "Kepler and the RR Lyr Stars," Doug Welch on "A Study of RR1 Light Curve Modulation in OGLE-III Bulge Time-series," and Geoff Clayton on "Two Centuries of Observing R CrB: What Will the Role of the AAVSO Be in the Next Century?"

After lunch, General paper session I included a talk by Pierre de Ponthière on "A Multi-Longitude Observation Campaign on KV Cnc, an RR Lyr Star with Irregular Blazhko Modulations," George Silvis on "The Eggen Card Project," Rodney Howe on "AAVSO Visual Sunspot Observations vs. SDO HMI Sunspot Catalog," and Matthew Templeton and Elizabeth Waagen on "Unpredictable LPVs: Stars Dropped from the AAVSO Bulletin."

Pierre de Ponthière, Bob Stine, and Donn Starkey at the Annual Meeting

John Martin and David Turner at the Annual Meeting

After breaking for refreshments, General paper session II included a paper by Mike Simonsen on "Z Cam Stars in the Twenty-first Century" and one by David Turner on "Aperture Fever and the Quality of AAVSO Visual Estimates: Mu Cep as an Example."

Friday evening was left unscheduled for attendees to have time for smaller meetings and socializing.

Saturday, October 12, 2013

Breakfast and Registration were followed by the Membership meeting, which was called to order at 9 a.m. and attendees welcomed by AAVSO President Mario Motta. Gary Walker gave the Secretary's Report and Tim Hager gave the Treasurer's Report, which were approved. A budget for 2014 was presented which will withdraw $620,000 from the earnings of the Endowment. This amount is within the 5% limit specified by the Council.

Mike Simonsen and Sebastian Otero at the Annual Meeting

Director Arne Henden reported on deceased members and friends of the AAVSO: Louis Cohen, Arthur Cox, Margherita Hack, Albert Jones, Hilde Luft, Giuliano Romano, Emile Schweitzer, and Arline Waagen. The membership stood for a moment of silence.

Kevin Marvel reported for the Director Search Committee and outlined the process that will be followed, which includes review of the job description, announcement of the position, review of applications, phone interviews, development of a short list, in-person interviews with those on the short list, individual short-list candidate visits to Headquarters and meetings with the staff, determination of ranking of final short list, individual interviews of ranked finalists with Council, and Council's selection of final candidate, followed by negotiation and hiring.

Director Arne Henden reported that we have over 23 million observations in the AAVSO International Database as it continues its exponential rise. As in recent years, the observations received in 2012-2013 are approximately 25% visual and 75% CCD. Membership increased during the year, with two-thirds of new members coming from the USA and one-third other countries. AAVSO members current in their dues now total nearly 1,100.

Arne followed with a summary of the status of currently funded grants as follows: a workshop to create a DSLR User's Manual funded and scheduled for March 2013, Jeno Sokoloski's novae grant funded, a no-cost extension to the MOST Orion YSOs grant approved, a no-cost extension to the grant studying low-frequency photometric variability in Miras approved, funding for Chandra E/PO extended through September 2015, APASS Ayers operation funds grant funded, LCOGTN Red Extension grant for APASS funded. Upcoming proposal submission topics include: APASS, AAVSO's online observer education CHOICE courses, a Major Research Instrumentation proposal regarding 2GSS, a Transforming Undergraduate Education in Science (TUES) proposal related to AAVSOnet, and a TUES proposal with Travis Rector related to VPHOT and spectra. Please see the Minutes of the Council meeting above for details on some of these grants.

President Mario Motta announced that Chryssa Kouveliotou, David Turner, Roger Kolman, and Doug Welch were elected to two-year terms on the AAVSO Council. The membership meeting adjourned at 10:45 a.m. and the group photo was taken.

Following a coffee break, everyone reconvened for an awards session. Director Arne Henden announced AAVSO Digitizer Awards for Bruno Billiaert at the 5,000 observations digitized level and for Kevin Paxson, who was present to receive his award, at the 60,000 observations digitized level. AAVSO Solar Observer Awards were announced for 17 Sunspot observers and four SID observers. Gerry Dyck was present to receive his award for 2,000 Sunspot observations.

A non-AAVSO award was then presented. The 2013 recipient of the Astronomical League's Leslie Peltier Award for observational contributions to astronomy was longtime AAVSO member and observer John E. Bortle. John was not able to attend the AL meeting at which the award was announced, so arrangements were made for the presentation to be made to him at the AAVSO Annual meeting. AL President Carroll Iorg presented John with the Peltier Award plaque and invited John to make comments. Unfortunately John was suffering from severe laryngitis and so was able to make only a few remarks. Over thirty recipients of the Peltier Award are longtime AAVSO members/observers, and several were present in the audience, including Peltier Award Committee Chair Roger Kolman and Peltier Committee member Barry Beaman. The recipients came forward to share in a toast to John with Peltier Station wine (a California winery, no apparent relation to Leslie Peltier) that Roger and his family had found in their travels.

Astronomical League President Carroll Iorg (center) presents long-time AAVSO member and observer John Bortle with the AL's prestigious Peltier Award as AAVSO Director Arne Henden looks on

Before breaking for lunch, attendees presented brief introductions on their posters, which were on display all day. Ed Los spoke about "The DASCH Public Data Release," George Silvis about "Coding the Eggen Cards," Vanessa Swenton about "Identification of Cepheid Variables in ASAS Data," Jessica Johnson about "Identification of BY Dra Variable Stars Among ASAS Cepheid Candidates," and Rodney Howe on behalf of Brian Mason about a "Summer Student Solar Observing Project Determining the Sunspot Number."

AAVSO members who attended the meeting who have won the Astronomical League's Peltier Award, with AL President Carroll Iorg. From left: John Bortle, Gerry Samolyk, Barry Beaman, Richard Berry, Carroll Iorg, Mike Simonsen, Arne Henden, Roger Sinnott, Elizabeth Waagen, and Roger Kolman

After lunch a session of presentations by former Peltier Award winners took place. Mike Simonsen spoke about Leslie Peltier and his contributions and how Leslie had influenced his own observing life, and Richard Berry, Arne Henden, and Elizabeth Waagen each spoke about the events leading to his or her award. Other Peltier Award recipients who were present but did not speak included Gerry Samolyk and Roger Sinnott.

A coffee break followed, along with time for poster viewing and discussion. A number of Peltier Award-related photos were also taken by AL and AAVSO photographers.

At 4 p.m., invited speaker Dr. George Ricker, Director of the CCD Laboratory in the Massachusetts Institute of Technology (MIT) Kavli Institute for Astrophysics and Space Research, gave the meeting's keynote address on "The Transiting Exoplanet Survey Satellite Mission", whose purpose is to survey nearby stars for transiting exoplanets from Earth-sized to gas giants with the goal of identifying terrestrial planets in the habitable zones. This NASA Astrophysics Explorer mission, of which Dr. Ricker is the Principal Investigator, has been selected for launch in 2017. Dr. Ricker's fascinating talk on TESS was greatly enjoyed by an enthusiastic audience.

The AAVSO Banquet was held Saturday evening at the Hilton-Woburn Hotel, beginning with a cash bar at 6:15. Prior to dinner, Michael Simonsen was presented with a five-year AAVSO Staff recognition award; Mike, a longtime member/observer, began working for the AAVSO in the areas of membership and development in November 2007, so had completed nearly six years by the end of fiscal 2002–2013. Then, the first AAVSO Table Trivia Contest was held, with each table forming a team to answer a variety of AAVSO/astronomical questions. It definitely helped to have longtime members and observers at one's table! The winning team (the Red Giants) received much-admired AAVSO souvenir pens. Everyone then enjoyed the delicious buffet dinner and dessert bar. At the end of the evening, outgoing President Mario Motta closed the meeting and symbolically transferred the presidential gavel to incoming President Jeno Sokoloski, who had had to leave the meeting prior to the banquet. As attendees lingered talking, challenges were heard for next year's trivia contest.

Papers and Posters Presented at the 102nd Annual Meeting of the AAVSO, Held in Woburn, Massachusetts, October 11–12, 2013

Paper Session: "The Role of Amateur Astronomers in the Age of Large-Scale Surveys"

Invited Talk: "Photometry of Bright Variable Stars from Space with the BRITE Constellation Nano-Satellites: Opportunities for Amateur Astronomers to Participate"
Edward F. Guinan

"Using the Transient Surveys"
Arne A. Henden

Paper Session: "The Role of Amateur Astronomers in the Age of Large-Scale Surveys"

"Kepler and the RR Lyrae Stars"
Katrien Kolenberg

"A Study of RR1 Lightcurve Modulation in OGLE-III Bulge Time-series"
Douglas L. Welch

"Two Centuries of Observing R Coronae Borealis. What will the Role of the AAVSO be in the Next Century?"
Geoffrey C. Clayton

General Paper Session

"Multi-Longitude Observation Campaign of KV Cancri: an RR Lyrae Star With Irregular Blazhko Modulations"
Pierre de Ponthière

"The Eggen Card Project"
George Silvis

"AAVSO visual sunspot observations vs. SDO HMI Sunspot Catalog"
Rodney Howe

"Unpredictable LPVs: Stars Dropped From the *AAVSO Bulletin*"
Matthew R. Templeton, Elizabeth O. Waagen

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papers and posters, cont.

"Z Cam Stars in the Twenty-first Century"
Mike Simonsen

"Aperture Fever and the Quality of AAVSO Visual Estimates: Mu Cephei as an Example"
David G. Turner

"Summer Student Solar Observing Project determining the sun spot number" (Poster)
Brian Mason

"The DASCH Public Data Release" (Poster)
Edward J. Los

"Coding the Eggen Cards" (Poster)
George Silvis

"Identification of Cepheid Variables in ASAS Data" (Poster)
Vanessa Swenton

"Identification of BY Draconis Variable Stars Among ASAS Cepheid Candidates" (Poster)
Jessica Johnson

Keynote Speech Session

Invited Guest Speaker: Dr. George R. Ricker, Massachusetts Institute of Technology, Cambridge, Massachusetts
"The Transiting Exoplanet Survey Satellite Mission"

Deceased Members, Observers, and Colleagues

Cohen, Louis, Massachusetts
Cox, Arthur N., New Mexico
Hack, Margherita, Italy
Jones, Albert F. A. L., New Zealand
Luft, Hilde, D., New York
Romano, Giuliano, Italy
Schweitzer, Emile, France

AAVSO Solar Observer Awards (announced at the 102nd Annual Meeting in Woburn, Massachusetts, October 12, 2013)

Sunspot Observers

1,000 observations	Timothy Hrutkay, PA	Enrico Mariani, Italy
1,500 observations	Clyde Simpson, OH	
2,000 observations	Gerald Dyck, MA	
2,500 observations	Michael Boschat, Canada (RASC)*	Monty Leventhal, Australia
3,000 observations	Franky Dubois, Belgium (VVS)*	James Knight and Shirley Knight, South Africa
	Etsuiku Mochizuki, Japan	Gerd-Lutz Schott, Germany (BAV)*
	Piotr Urbanski, Poland	A. Gonzalo Vargas, Bolivia
3,500 observations	Robert Brown, CA Miyoshi Suzuki, Japan	Tom Fleming, TX
4,500 observations	German Morales Chavez, Bolivia	

Sudden Ionospheric Disturbance Observers (40 or more months of reports)

Frank Adamson, Australia
Roberto Battaiola, Italy
Susan Oatney, KS
François Steyn, South Africa

AAVSO Digitizer Awards (presented or announced at the 102nd Annual Meeting of the AAVSO, Woburn, Massachusetts, October 12, 2013)

60,000 observations digitized
Kevin B. Paxson, OH

5,000 observations digitized
Bruno Billiaert, Belgium (VVS)*

**These observers' group affiliations are as follows: BAV—Bundesdeutsche Arbeitsgemeinschaft für Veränderliche Sterne e.V. (Germany); RASC—Royal Astronomical Society of Canada; VVS—Vereniging Voor Sterrenkunde, Werkgroep Veranderlijke Sterren (Belgium)*

AAVSO Staff Recognition Award Recipient (presented at the 102nd Annual Meeting of the AAVSO, Woburn, Massachusetts, October 12, 2013)

Michael A. Simonsen—five years

New Members 2012–2013

Allyn, Mike, Idaho
Altenburg, Robert, Pennsylvania
Anicetti, Carlos, California
J Armelli, Kerianne, Ohio
Ayers, Robert, California
Baker, JoDee, Michigan
J Banys, Thomas, Poland
Barlow, Robert, Great Britain
Bayer, Scott, California
Bazinet, Robert, Connecticut
Becker, Carter, Michigan
Bell, Brandon, Colorado
Bhattacharya, Shouvik, Nebraska
Biersack, Mark, California
Bolengo, Jean-Pierre, Switzerland
Boreel, Joris, Netherlands
S Boyle, Gavin, Great Britain
Brown, Todd, Pennsylvania
Buck, William, Louisiana
Calis, Cagdas, Cyprus
Canelhas, Jorge, Portugal
Carroll, Stephen, Arkansas
Cassignard, Laurent, France
Caton, Daniel, North Carolina
Clarasso, Carles, Spain
Clinnick, Terry, Australia
Cooper, Ashley, Australia
Costello, Marlin, California
Covey, Kevin, Arizona
Cox, Johnny, South Carolina
de France, Thibault, France
Dean, Stephen, Great Britain
S Dean, William, California
Deren, Oskar, Poland
Doktor, Ian, Canada
Downing, John, California
Drzewiecki, Gary, New Jersey
Duarte, Eduardo, Brazil
Eaves, Martyn, Great Britain
Edmiston, Steven, Louisiana
Finney, Henry, New Mexico
Flewelling, Heather, Hawaii
Froeschlin, Christian, Netherlands
Fuller, Joseph, California
Glassner, Richard, Missouri
Greathouse, Lee, Canada
Guenther, Franklin, Maryland
Hallsten, Pierre, Sweden
Halstead, Terry, Oregon
Hancock, Lucy, District of Columbia
Haugh, Thomas, Florida
Heald, Michael, APO/FPO
Heiland, Leo, Arizona
Herman, Kimberly, Texas
Hoppes, Phillip, Arizona
Huemmerich, Stefan, Germany
Ishmael, David, Oregon
Jahn, Jost, Germany
S Jenkins, Robert, Australia
Jordan, Brandon, Tennessee
Kahle, Frank, Germany
Karlsson, Thomas, Sweden
S Kay, James, Vermont
Kerrigan, David, Great Britain
Kneip, Raymond, Luxembourg
Kobetz, Paul, California
Kohl, Michael, Switzerland
Kostelecky, Timothy, Washington
Krawczak, John, Minnesota
Kristl, Joseph, Massachusetts
Krobusek, Bruce, New York
Kubala, Rolf, Germany

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new members, cont.

Kuzava, Ronald, Illinois
Kuznetsov, Sergey, Russia
J Langley, Charley, Utah
Lawler, Jim, California
Lee, Darrell, Texas
Loyola, Benito, Virginia
Mansdahl, Bjorn, Sweden
S Marchesini, Danilo, Massachusetts
Martin, Talia, Rhode Island
S Marttila, Ville, Finland
McCammon, John, Colorado
McGill, Stewart, Florida
McGinn, George, Florida
J Middlemiss, Philip, New Zealand
Miele, John, Alabama
Mikolajczyk, Dean, Illinois
Millward, Mervyn, Australia
Moat, Alice, Pennsylvania
Moffett, David, South Carolina
Mogul, Ira, Florida
Mraz, Frank, Florida
Murthy, Venkatesha, California
Nguyen, Khoa , California
Orzechowski, Anthony, Pennsylvania
Osman, Peter, Australia
Paradisi Miconi, Gaetano, Italy
Parsons, Stuart, Florida
Pepin, Thomas, Connecticut
Persha, Gerald, Michigan
Peterson, Robert, Wisconsin
Phelps, Matthew, Massachusetts
Pollard, Karen, New Zealand
Porter, Malcolm, Great Britain
Powell, William, Nebraska
Powles, Jonathan, Australia
Probert, Will, New Zealand
Prokosch, Michael, Texas
Radford, Don, Australia
Ramirez, Alberto, New York
Ranger, Allan, Canada
Redding, Terrence, Florida
Rochford, Patrick, Alabama
Roemer, William, Pennsylvania
Rossi, Gianluca, Italy
J Schuler, Kaleb, Louisiana
Shank, Keith, Texas
J Singh, Vidya, Indiana
Smirnov, Andrey, Russia
Smith, Andrew, Great Britain
Spampinato, Joseph, Pennsylvania
Spears, Stephen, Ohio
Steffens, Gary, Arizona
Steiner, Ken, North Carolina
Streamer, Margaret, Australia
Strickland, Willie, Texas
Suhovecky, Mark, Indiana
Szoke, Balazs, Great Britain
Tattersall, (Ronald) Peter, Canada
Tekatch, Ann, Canada
Thompson, Mike, Australia
Trudelle, David, Canada
Tsao, Young Chiech, Taiwan
Turnbull, Jess, Lithuania
Van Der Hoeven, Adrianus, Netherlands
Van Wassenhove, Jeroen, Belgium
Vince, Charles, Great Britain
Wahlstrom, Robert, Sweden
Warell, Johan, Sweden
Weber, Nick, Massachusetts
Werder, Rolf, Germany
Will, Matthew, Illinois
Wisehart, Christopher, Virginia
Womack, Carolyn, Texas
Worthen, Thomas, Arizona

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new members, cont.

Wright, David, Florida
Young, Robert, Pennsylvania
J Young, Joshua, Massachusetts
Zubovic, Dario, Croatia

S = *sustaining membership*
J = *junior membership*

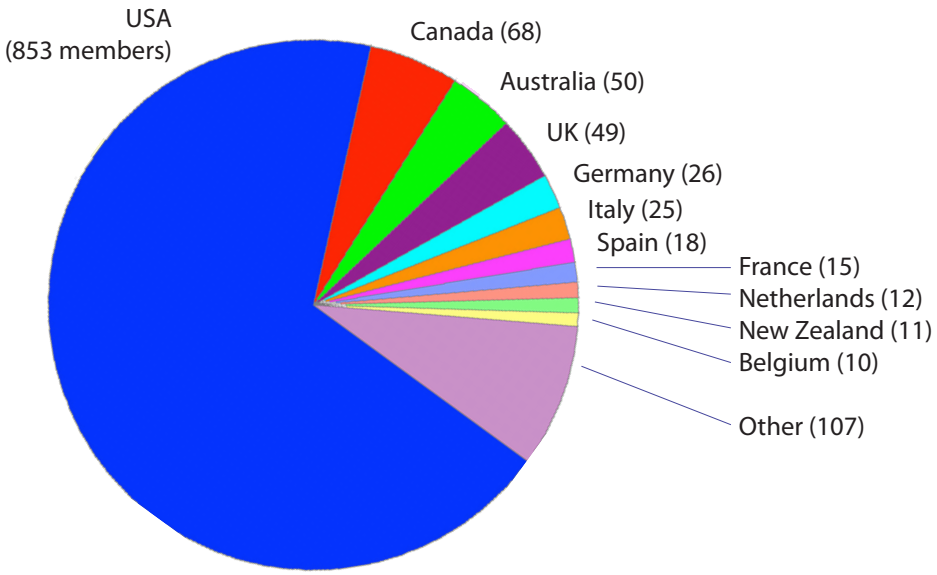
Annual Report of the Director for Fiscal Year 2012–2013

Arne A. Henden, Director

This was a very eventful year for astronomy, from the demise of Kepler to the launch of Gaia. The U.S. Congress decided to sequester research funds; our holiday cards got burned up in a tractor-trailer fire; we had to move AAVSOnet telescopes. Two bright comets portended these disasters, but one naked-eye nova (and another one in December 2013) predicted a brighter future! Since that future will be the subject of next year's report, let's concentrate on the fun things that happened in the past year.

Membership

We continue to grow our membership, albeit slowly. We had 1,244 members by the end of the year, along with an equal number of non-member observers.



AAVSO membership, 2012–2013, by country

An important change at the end of this year was a restructuring of the membership dues. We added a category for developing countries, providing membership benefits to those who might have had difficulty in affording membership in the past. This restructuring was reported in the July 2013 *AAVSO Newsletter*. Regular Annual dues will now be $75.00 annually. The annual Sustaining membership rate will be raised to $150.00. If you are an educator, student, have a limited income, or you are on a pension, your dues will be $37.50 per year. If you reside in any country other than Australia, Austria, Belgium, Canada, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, the Korean Republic, Luxembourg, the Netherlands, New Zealand, Norway, Poland, Portugal, the Slovak Republic, Slovenia, Spain, Sweden, Switzerland, the United Kingdom, or the United States, your annual dues will be only $25.00. If you reside in a low-income/developing country, the dropdown menu in the online membership application will show this option, allowing you to subscribe at this special reduced rate. We hope this option enables people from many poorer countries to join the AAVSO and have all the benefits of regular membership.

Observation Database

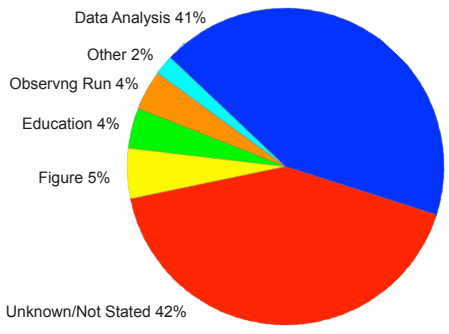
In FY2012–2013, we collected 1.54 million observations: 173,127 of these were visual observations; 1,883 were PEP or photographic observations; 2,820 were DSLR measures. The remainder (about 1.36 million) were CCD observations. The CCD totals remain high, as we get many thousands of observations for any time-series campaign (V339 Del is an example). The two charts on the following pages show the annual submission totals since 1911, and the total submitted observations ("Megasteps") since 1911. You can see that the trend is exponential, so that by 2021, we will be collecting 15 million observations per year!

We received data for more than 8,400 stars during the fiscal year, but of those only 330 had more than 1,000 observations; nearly 7,800 stars received an average of less than one observation per day during the year. We are exploring ways of encouraging broader, long-term coverage of many interesting stars without compromising research programs that require intensive time-series.

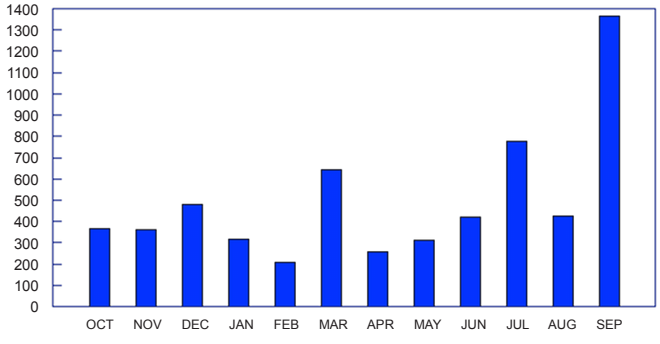
Work continues on importing the electronic Royal Astronomical Society of New Zealand (RASNZ) database. A large fraction of the observational data comes from just a few observers, such as Albert Jones and Danie Overbeek, and so was straightforward to import. The remaining observations require assigning observer codes to those dozens of observers who were not regular AAVSO contributors, as well as determining what charts and comparison stars were used. We hope to finish this project in the near future.

A couple of years ago, Grant Christie of the RASNZ shipped several boxes of file folders from former Variable Star Section Director Frank Bateson to the AAVSO HQ. These file folders contained southern-star observations, some that had made it into the RASNZ database and then into the AID when that database was transferred to us, and some that were never digitized. Last year, Mike Saladyga went through the boxes, assessed, categorized, filed, and cataloged the relevant folders. The observations come in two "flavors": studies of stars that were in the RASNZ database, and are likely duplicates of the electronic database we received a few years ago; and about 171 stars that have no observations in the electronic database, but which have paper copies of observations. Mike worked with Albert Jones on three of these stars as a pilot study, digitizing about 2,000 observations. The remaining stars will be digitized as time permits.

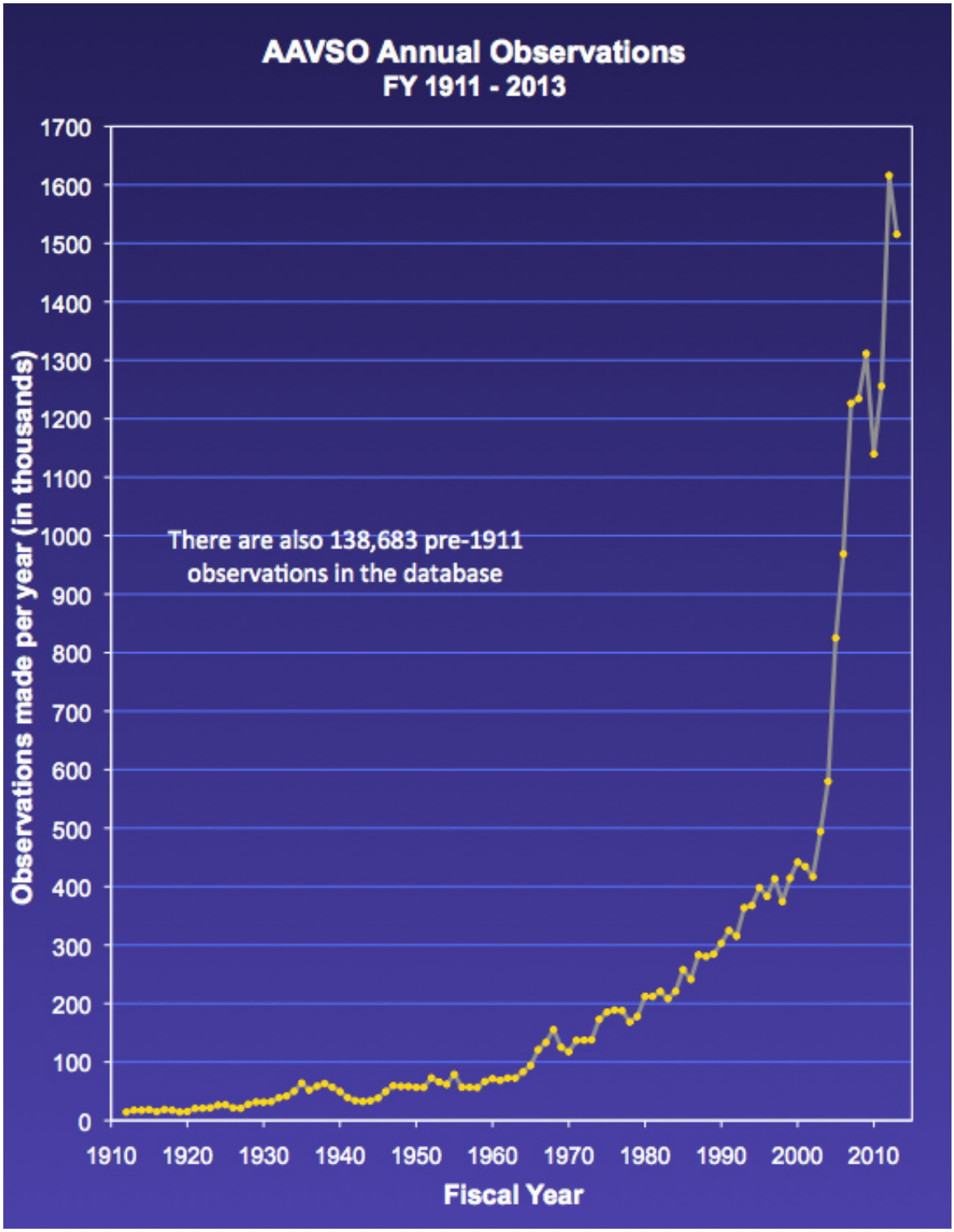
We had 5,917 data requests from a multitude of researchers during FY2012–2013. The rate of data requests varied strongly throughout the year, with September 2013 being the busiest. Of those who volunteered to give demographic information about their purpose, Professional and Amateur astronomers accounted for equal numbers of downloads (1,300 and 1,267, respectively), with Students accounting for 557 and Educators another 198. Data analysis remained by far the most popular given reason for accessing data, with 2,438 downloads being used for this purpose. This is nearly an order of magnitude higher than the next highest—using data to create a figure, which accounted for 311 downloads. This was followed by planning observing runs, with 270 downloads; educational purposes with 242; and "Other" with 130. Researchers are clearly making intensive use of AAVSO data for research purposes in great numbers, which shows the importance of the AAVSO International Database as a community data resource.

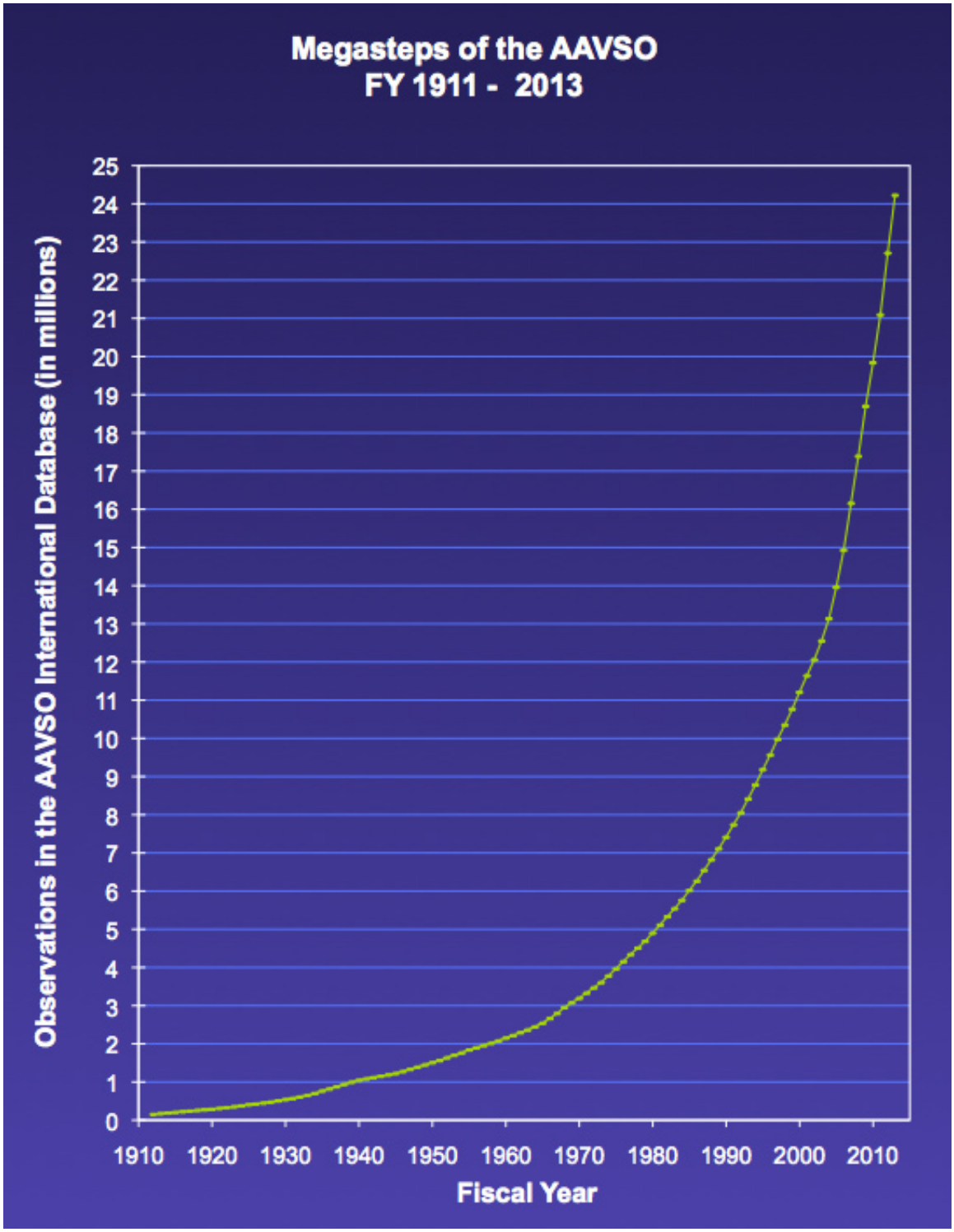


Areas in which AAVSO data or services were used during FY 2012–2013



Number of data requests by month during FY 2012–2013

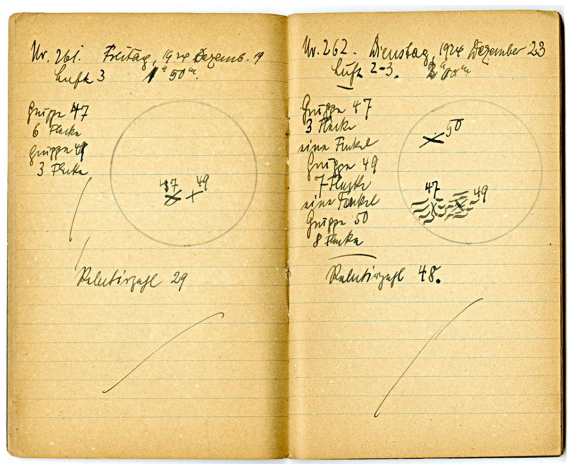

AAVSO Annual Observations
FY 1911 - 2013
Observations made per year (in thousands)
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
There are also 138,683 pre-1911 observations in the database
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
2010
Fiscal Year


Megasteps of the AAVSO
FY 1911 - 2013
Observations in the AAVSO International Database (in millions)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
2010
Fiscal Year

Nova Delphini 2013 occurred in August, and with 131 downloads was the most-downloaded data set. Variables of nearly all types were represented in the full list, but the remainder of the top ten most-downloaded data sets were a mixture of giants (Z UMa, omi Cet, and R Sct), Cepheids (del Cep and eta Aql), a cataclysmic (SS Cyg), a luminous blue variable (P Cyg), and two recurrent novae (T Pyx and RS Oph). All of these only accounted for a combined 673 downloads; the remaining 5,000 more comprise nearly all known variable star types, and more than 1,900 stars were requested only once.

We responded to or researched about 60 unique queries (often with multiple follow-up responses) regarding the AAVSO archives or history. Leif Svaalgard (Stanford) stayed in the AAVSO Feibelman Guest Suite for a couple of weeks during May, working on the Herbert Luft solar notebooks, as mentioned in the July *AAVSO Newsletter*. Brad Schaefer stayed in the Guest Suite in January, working on historical observations of T CrB, N Aql 3 (1918, V603 Aql), and N Per 2 (1901, GK Per). Mike Saladyga also helped Brad in researching those stars and Peltier's observations.

Visiting astronomer Leif Svalgaard (center) with AAVSO Archivist Mike Saladyga (left) and Science Director Matt Templeton

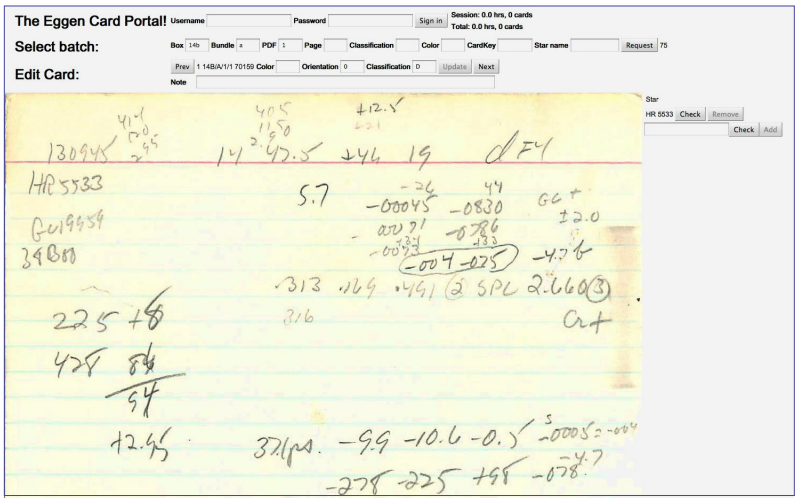


Two pages from one of the 75 solar observing notebooks by AAVSO observer Herb Luft. The entries here were made in 1924 when he was living in Breslau, Germany

New material of the Janet Mattei era was received from Mike Mattei, and was arranged and catalogued. The collections of Tom Williams and Tom Cragg were also arranged and catalogued by Mike Saladyga.

The Eggen card collection was scanned several years ago. AAVSO member-observer George Silvis is heading a volunteer group to catalog and digitize the observations. About 8,000 of the 100,000 cards have been inspected. He is always looking for volunteers to

help inspect the rest! The result of this project will be a catalog of Eggen's photoelectric measures of stars, primarily in the southern hemisphere.



A view of the computer interface created by George Silvis for evaluating the data cards created by photoelectric photometrist Olin Eggen, which are now a part of the AAVSO Archives

A volunteer group headed by Dr. Matthew Templeton continues to digitize published variable star photometry and submit it to the AAVSO International Database. A highlight this year was the incorporation of the thousands of observations of Mira contained in a paper by Paul Guthnick in 1901. These extend a calibrated light curve of this variable back to the 1600s—an amazing accomplishment.

Website

We've implemented some changes on the website. The home page was revised, relocating the staff blog and implementing a Stellar News Feed. These news articles are garnered from astro-ph and press releases, and contain up-to-date information on stars, observing techniques, equipment, and variability. Mike Simonsen is leading this effort as he has access to several channels of information using his press credentials.

We now have made the AAVSO donate/support options more prominent on the home page. The Amazon.com option is particularly important, as it gives us a means of collecting donations at no cost to the donor. All you have to do is reach Amazon by clicking the AAVSO home-page link, thereby coming from the AAVSO rather than your own computer. Amazon gives us a portion of all purchases made in this manner, but the purchaser sees the exact same cost as if (s)he had accessed Amazon directly.

We continue to update the News slider with new stories. Several of the slides over the past year have been review papers from the Centennial issues of *JAAVSO* (Volume 40).

Will McMain continues his upgrade of the website. The HQ membership database was restructured in preparation for the new dues structure, and a new admin tool was developed to give staff access to the membership information. Will is working with our Australian volunteer David Benn on revising the Light Curve Generator. Several new online forums have been created, including the Journal Club and one for novae. We have many more people participating in the forums, showing that they have been accepted and are better meeting the needs of the observers.

Other changes to the website are less obvious, but take significant staff time. We update material on most pages (such as those for AAVSOnet) when they become dated.

International Cooperation

We acknowledge with appreciation the observations sent to the AAVSO by members of the following variable star associations, either individually or as a group, for inclusion in the AAVSO International Database for dissemination to the astronomical community worldwide:

a. AAK—Albireo Amateur Astronomy Club Public Association (Hungary)
b. Agrupacion Astronomica de Sabadell (Spain)
c. Asociacion de Variabilistas de Espagne (Spain)
d. Association Française des Observateurs d'Étoiles Variables (AFOEV)
e. Association of Variable Star Observers "Pleione" (Russia)
f. Astronomical Society of Southern Africa, Variable Star Section
g. Astronomischer Jugendclub (Austria)
h. Astronomisk Selskab (Scandinavia)
i. British Astronomical Association, Variable Star Section
j. Bundesdeutsche Arbeitsgemeinschaft für Veränderliche Sterne e.V. (BAV) (Germany)
k. Center for Backyard Astronomy
l. Clube De Astronomia De Sao Paolo (Brazil)
m. Israeli Astronomical Association, Variable Star Section
n. Koninklijke Nederlandse Vereniging Voor Weer-en Sterrenkunde, Werkgroep Veranderlijke Sterren (Netherlands)
o. Liga Iberoamericana de Astronomia (South America)
p. Madrid Astronomical Association M1 (Spain)
q. Magyar Csillagàszati Egyesület, Valtózocsillag Szakcsoport (Hungary)
r. Norwegian Astronomical Society, Variable Star Section
s. Nucleo de Estudo e Observacao Astronomica--Jose Bazilicio de Souza (Florianopolis, Brazil)
t. Red de Observadores (Montevideo, Uruguay)
u. Rede de Astronomia Observacional (Brazil)
v. Royal Astronomical Society of Canada
w. Royal Astronomical Society of New Zealand, Variable Star Section
x. Svensk Amator Astronomisk Förening, Variabelsektionen (Sweden)

y. Ukraine Astronomical Group, Variable Star Section
z. Unione Astrofili Italiani (Italy)
aa. URSA Astronomical Association, Variable Star Section (Finland)
ab. Variable Stars South (New Zealand)
ac. Vereniging Voor Sterrenkunde, Werkgroep Veranderlijke Sterren (Belgium)

Computers and Software

The data analysis computer used for APASS and AAVSOnet is working fine with its 21TB of disk space. Richard (Doc) Kinne has trimmed the file storage on occasion, and we've compressed most of the images, so have not yet filled the RAID disk to its capacity. However, we are at 70% capacity, with nearly 14TB used. Much of the APASS image storage is on external 4TB hard drives, and there is a mirror copy of all files at McMaster University (where the 320K images occupy about 11TB of compressed disk space!).

Matt has ported the Weekly Data Usage Report, so that observers can see how their observations are being used by the community.

VStar, the Java program written by David Benn as part of Citizen Sky, has undergone several improvements this past year. The major effort has been in documentation; David has written a 120-page user manual. The APASS and BSM epoch photometry databases are available as searchable plug-ins.

Doc revised the IP address space for HQ as part of the transition from a conventional T-1 line to using a Comcast business cable modem. Once the addresses were modified, Doc transitioned headquarters over to the modem with no noticeable negative effect. We now see faster upload/download times, and have not had any loss of service over the year.

AAVSOnet News

All of the AAVSOnet systems are at private observatories. We felt that this was the best approach: the telescopes are small and so don't occupy a lot of space and are easily maintained by an individual; it gives a number of AAVSO members and observers the opportunity to volunteer; it distributes the internet access, cloud patterns, and geographical location. We have facilities in the southern and northern hemisphere, and at a diversity of longitudes. At the same time, the systems are stock, off-the-shelf telescopes and cameras, not ideally designed for robotic use, and so don't always give optimal image quality and have a larger fraction of down time.

One of the factors that has to be considered when having multiple telescope hosts is that one or more may drop out. The manager might move; there may be health

problems; they may just decide that they don't want to do astronomy any more, or run an AAVSOnet telescope. Having small telescopes is a blessing for those cases, as we can pack them up and ship them to a new location fairly easily.

This happened last year with the AAVSOnet telescopes at Astrokolkhoz Observatory. Tom Krajci decided in October 2012 that he no longer wanted to host our telescopes. Since there were multiple telescopes involved (Tom was doing an excellent job of running telescopes for us, and always wanted more!), we had Mike Simonsen fly out, pick up the telescopes, and hand-deliver them to their new sites. Wright28 (W28) is currently at Lowell Observatory, and will be sited either at Anderson Mesa or the Discovery Telescope site, depending on forest service agreements; it will be installed during 2014. Wright30 (W30) was delivered to Bill Goff in California, and was put into service in January 2013. We took the AAVSO STL-1001E camera that had been on Tom's private K35 telescope, and added it to the W30 configuration to give a larger field with better pixelization and more filters. The Bright Star Monitor (BSM) was left at Bill Stein's observatory in Cloudcroft, NM. That facility was still under construction, so BSM (now BSM_NM) was only re-commissioned during the summer of 2013.

We installed BSM_Berry temporarily on the roof of Headquarters. This was done for a number of reasons: testing the HQ roof for observing feasibility; having a local telescope for testing hardware and software; giving the east-coast longitude for time-series work; seeing whether you can do quality variable star work from inside a metropolitan area. BSM_Berry was initially tested in January, but was fully commissioned during August. Part of the delay was in finding a suitable enclosure for the telescope. Initially the system was "tarped," but that meant you had to go on the roof every time you wanted to use the system, and sometimes cover the telescope during some inclement conditions. Gary Walker offered to construct an automated enclosure, which is why full operation started in August (after we installed the enclosure on the roof). BSM_Berry is a good performer, and can work down to its exposure limit (about 12th magnitude) over most of the sky. We have good visibility on the roof, and the sky brightness is not too bad, with city parks in two directions and the added height getting above most of the on-street glare. I'm impressed with its capabilities, in the heart of metropolitan Boston!

BSM_Hamren is the BSM system at Bob Stine's observatory in California. It used to be called BSM_CA, but was renamed in memory of Chris (Hamren) Stine's father. Bob has been working diligently to get BSM_Hamren working; we have several nights of V339 Del observations, as well as additional all-sky survey nights. There are a couple of minor holdups that prevent me from saying that this system is fully operational, but we are nearly there. BSM_Hamren will give us observations during the summer when the southwestern monsoon impacts telescopes in Arizona and New Mexico.

Our three larger telescopes (SRO in Arizona, OC61 in New Zealand, TMO61 in New Mexico) are operational, though we continue to improve each of these systems with better weather monitoring or additional instrumentation. For example, we've upgraded the CCD camera on TMO61 to a QSI-683, giving faster readout and an eight-position filter wheel. I made a trip out to Mt. John Observatory to work with the staff there on the final automation steps for OC61. We now have a computer-controlled mirror cover, index switches on the mount, and a good webcam there. Coming in the next year will be an instrument selector and the installation of the eShel spectrograph.

Overall, AAVSOnet is working reasonably well, and gives our members access to equipment and sites that would be impossible otherwise. We will be improving the automation over the next year to reduce the load on the host volunteer and the HQ staff, and we will be commissioning the remaining telescopes of the network. One welcome addition this year has been the Telescope Allocation Committee (TAC). With Dirk Terrell as the chair, and Sebastian Otero, Doug Welch, and Tim Crawford as members, this committee has studied each of the submitted proposals and made recommendations to the proposers as to the feasibility of the request and on optimizing the observations.

APASS News

The AAVSO Photometric All-Sky Survey (APASS) continues to operate nominally. The southern station has far more photometric weather than the north, and its 4x coverage of the southern sky is nearly completed. To fill in the observing gaps, we've started a bright extension to the survey. This extension uses shorter exposures to reach as bright as V=7.5, and expands the filter set to BVgrizY. A small grant from Las Cumbres was obtained to purchase the red Z-short and Y filters for each site. Tom Smith has been doing a marvelous job of both running the northern station and helping me with the southern system when things go wrong or I am on travel.

All of the starlists are uploaded to HQ on a nightly basis. About once every four months, we perform additional processing on the starlists to improve the astrometry and photometry, and merge the results to create a master catalog. As of May 2013, we had made seven data releases, with the last release containing 52 million stars that had been observed at least twice, and covering about 98% of the entire sky.

APASS is a volunteer effort, with many AAVSO members helping me out on the myriad of tasks required for each data release. I've mentioned Tom above, and would be remiss if I didn't also include the three professional astronomers associated with the project: Stephen Levine, who is doing the precision astrometry; Dirk Terrell, who is keeping

the computers running; and Doug Welch, who is archiving much of the data as both a backup to the HQ copy and an on-line research tool. All of the volunteers will be part of the first APASS paper that will be submitted next year.

Education

AAVSO member Donn Starkey leading a Hi Star session at the University of Hawaii-Manoa

The Carolyn Hurless Online Institute for Continuing Education (CHOICE) is the AAVSO's online educational initiative. Named after longtime member-observer Carolyn Hurless, the Institute offers short, on-line courses about diverse citizen-science topics. Each topic has a peer-level course leader and a separate on-line forum. Those who complete a course receive a certificate and a notation in the membership database of their certification. The student cost is minimal, and once the course materials are written, each re-offering of a course is much easier. Currently, staff are providing the initial course material, and after the course is offered once, a graduate of a course volunteers to be the leader of the next class. A typical class has 10 to 30 students and lasts for about a month. Previous topics have included: photometric uncertainty, building a visual observing program, CCD calibration, and light curve classification. Course offerings have been expanded each year. The courses provided for this fiscal year included CCD Photometry, Part One; CCD Image Calibration I/II; and Visual Observing Basics.

In 2012, a decade after membership attitudes were last investigated, a new set of three surveys was created by Aaron Price and Kevin Paxson. Two were issued and analyzed last year and reported on in that *Annual Report*. The third and final survey, designed by Kevin, was for learning how the professional community feels about the AAVSO, with the intent of finding new methods to improve our visibility and usefulness to the professional community. That survey was released in February, and the results were presented at the AAVSO's 2013 Spring Meeting, and the final reports were posted on the website in August 2013. We thank all in the professional community who participated in this survey, and we especially thank Kevin Paxson for the time and effort he put into this work.

The AAVSO held its first CCD School July 30-August 3, 2012. The school was held at Tufts University, as they offered an inexpensive venue for both classroom and lodging. About 25 students were present from across the globe. The Director gave

lectures for the entire week, covering topics from an introduction to digital sensors to photometry, transformation, statistics and a dabbling of astrophysics. We held a second CCD School during July 2013, but held it at Headquarters instead of Tufts. We like that venue better as it gives students more access to local equipment in a more intimate setting. We will be holding one final School in 2014.

We've implemented an online Journal Club forum. Two papers have been discussed this fiscal year, led by John Martin and Matt Templeton. We hope to do more on a continuing basis in 2014. Very few online journal clubs are available, so it is a learning process to see how best to implement this feature and get the maximum participation from AAVSO members.

As part of the Nova forum, I offered to help CCD observers improve their observing techniques, especially in regard to V339 Del (Nova Del 2013). This was a difficult target, with most of the scatter (after common mistakes were corrected) being caused by the strong emission lines, especially as the nova entered the nebular phase. Because of this, I started another experiment, to monitor the anomalous Cepheid candidate XZ Cet. Observations of this target are ongoing; we hope to provide targets like this throughout 2014 to improve our CCD observations.

The AAVSO Citizen Sky Project

As part of the IYA 2009 celebration, the AAVSO was awarded a major National Science Foundation (NSF) grant to involve a large number of Citizen Scientists in a real research project—following the eclipse of epsilon Aurigae that occurs every 27 years and developing scientific projects related to the event. The first workshop occurred just before FY 2009/2010, but the second workshop was held in early September 2010. That one, at the California Academy of Sciences, was devoted to data analysis and paper writing. The eclipse occurred on schedule, with thousands of estimates reported to the AAVSO. We're still monitoring the star out of eclipse to more fully understand the pulsational behavior of the visible F-class star. This will also help in removing the pulsational signature seen during the eclipse, so that we can study just the eclipse phenomenon itself.

One of the surprising outcomes from this grant was the interest in DSLR observing. Ideally suited for bright-star photometry, simple cameras that are used in everyday life can also be used at night for imaging. Brian Kloppenborg worked with a small team during the Citizen Sky grant to create spreadsheets for processing data and performed a few tests of data quality, showing that the green channel closely matches the standard Johnson V-band system. We applied for a supplemental grant from NSF to hold a final workshop, this one on crowdsourcing the creation of a user manual for DSLR photometry. About

20 participants visited Headquarters on March 22–24, 2013, to work together in small groups on each chapter of the manual. Brian Kloppenborg edited the post-workshop version of the manual to ensure no gaps in content and a cohesive final product. AAVSO Headquarters will make the final edits and release the manual in 2014..

Aaron Price worked hard with his doctoral advisor, Hee-Sun Lee, and wrote a research paper on the Citizen Sky project that has now been accepted and published in the *Journal of Research in Science Teaching* (*JRST*): "Changes in participants' scientific attitudes and epistemological beliefs during an astronomical citizen science project."

External Grants

MOST NASA grant

Dr. Matthew Templeton was awarded a NASA grant in 2011 to use the Canadian MOST spacecraft. Matt proposed using MOST to study stars in the Orion Trapezium region, concentrating on BM Ori but also imaging another couple of dozen stars. Those observations were taken during December 2010 and January 2011, for a total of about 30 consecutive days of data. We supported those observations with a ground-based campaign to acquire photometry before, during and after the MOST window. Many nights of data were also obtained with the AAVSO Bright Star Monitor. Matt is now finalizing the analysis, and has written a paper in collaboration with Bill Herbst (Weslyan University) and Joyce Guzik (Los Alamos National Laboratory).

Two Eyes, 3D NSF grant

Two Eyes, 3-D, an NSF AISL grant spearheaded by Aaron Price, studies the cognitive processes and learning outcomes involved in 2D and stereoscopic visualizations of highly spatial scientific objects, with a goal of building a more effective learning experience. Aaron has been studing school children using a series of images in both 2D and 3D and asks content and spatial questions about what they see. A pair of HD stereoscopic films about colliding galaxies and supernovae was developed and presented by the Alder Planetarium as well, to study how adults learn spatial concepts. The tie-in for the AAVSO is in the variable-star aspects of the movies and images, an understanding on how to better make finding charts, and the additional funding that will be available for our infrastructure. Most of the data have been collected, and Aaron is now looking for correlations and differences.

Second Generation Synoptic Survey (2GSS) grant

We received a grant last year from the Robert Martin Ayers Sciences Fund. Provisionally

called the Second Generation Synoptic Survey (2GSS), this project aims to cover the entire sky, every night, from 10th to 17th magnitude, in two simultaneous bandpasses. This is much like the All Sky Automated Survey (ASAS) on steroids. It is a follow-on to APASS, highly leveraging its excellent calibrations to permit observations anywhere in the sky in even non-photometric weather. The grant paid for the first node of an anticipated five-node network (if we can obtain external funding). Stephen Levine and I installed the first telescope on Anderson Mesa (Lowell), and anticipate test observations to begin in early fiscal 2014.

Nova Grant

Dr. Jennifer Sokoloski, a Council member, was awarded an NSF grant, "Beyond Spherical Cows: Writing the Next Chapter on Novae." As part of that grant, Jeno has agreed to the science advisor for the Nova section of the AAVSO, and will work with the AAVSO to obtain optical light curves of the novae that will be studied. The AAVSO has a sub-contract with her for performing the campaign effort. In August 2013, a naked-eye nova was discovered in Delphinus (V339 Del), and was the target of a concentrated campaign to acquire high quality multi-filter photometry, visual estimates, and spectroscopy. We hope this will be the first of many such targets to follow during the course of Jeno's grant.

The Janet A. Mattei Research Fellowship

Ulisse Munari (Asiago) was the JAM Fellow for a second year. Ulisse was at Headquarters for about a month in June/July, working on various aspects of APASS. He used data from the RR Lyr stars study (recently published, from 2013 results) to search for new variables, locating about 300 candidates. A short paper was submitted. We also worked on several novae and supernovae that had gone into outburst over the last year, locating all observations taken through the AAVSOnet as well as preparing several plans to acquire new deep images. Ulisse also prepared a presentation on APASS for the "Observing Techniques, Instrumentation and Science for Metre-class Telescopes" workshop, held in late September 2013 in Slovakia. While at Headquarters, Ulisse's spouse, Emma Rigoni, volunteered on a variety of projects that included updating our membership database with historical information.

Observing Campaign news

AAVSO data and assistance continue to be in high demand from the professional community around the world. This year AAVSO observers participated optically—and in some cases spectroscopically as well—in 23 observing campaigns on over 60 objects and followed the outburst and decline of 12 galactic novae and numerous extragalactic supernovae.

Observations were made using different methods: visual (eye plus telescope or binoculars), DSLR photometry, photoelectric photometry (primarily V band), near-infrared (J and H bands) photometry, CCD BVRI photometry, and spectroscopy. As spectroscopy becomes increasingly available as an amateur astronomer resource, more AAVSO observers are participating in this relatively new field.

Campaign targets ranged from young stellar objects to supernovae and everything in between—symbiotics, RCB stars, Miras, cataclysmic variables of every type, novae and recurrent novae, eclipsing binaries, exoplanets, blazars, and quasars—and even included an occultation of Pluto to study its atmosphere and extinctions of Jovian satellites to learn more about dust, atmospheres, and magnetic fields in this complex system. Some targets were monitored for weeks or months, some for only a few days, and cadence (frequency of observation) ranged from once per night to every few minutes for as many hours as possible. A few of this year's campaigns are described below.

From September 2012 through the entire 2012–2013 fiscal year, AAVSO observers participated in a large campaign on **forty cataclysmic variables** organized by Drs. Boris Gaensicke (Warwick University), Joseph Patterson (Columbia University, Center for Backyard Astrophysics), Arne Henden (AAVSO), and a consortium of thirteen other professional astronomers from Chile, Germany, Italy, the United Kingdom, and the USA. In their study of the white dwarf component of the selected cataclysmic variable systems, their campaign goal was to observe each system at minimum brightness with HST. About six weeks at a time, several stars were scheduled to be observed sequentially with HST on certain dates.

The AAVSO contribution was threefold: starting two to three weeks before its HST date, monitor each target nightly to be able to inform Dr. Gaensicke—and so the HST schedulers—that 24 hours before the HST observations the target was not in outburst and was not likely to be in outburst during the HST observations; inform Dr. Gaensicke at that same time of the magnitude of the object to reassure the HST schedulers that the telescope equipment would not be in danger from a bright outburst; and provide a good light curve of each target before, during, and after the HST observations for correlation with the HST data. The AAVSO part of the campaign was coordinated by Headquarters. 50 *AAVSO Alert Notices* and *AAVSO Special Notices* were issued to observers during the year with target identifications, observing dates, schedule revisions, and observing instructions regarding obtaining visual observations, multiband photometry, and spectroscopy. As of the end of the fiscal year, 39 targets from the original list of 40 had been successfully observed by the HST Cosmic Origins Spectrograph, with the remaining target scheduled for March 2014. In October 2013, Dr. Gaensicke wrote: "This HST project has gone incredibly well, there are now two PhD students working full-time

on the data we obtained throughout 2013, and there will be a lot of exciting [results]! Without the help of your observers, this project would not have been possible...."

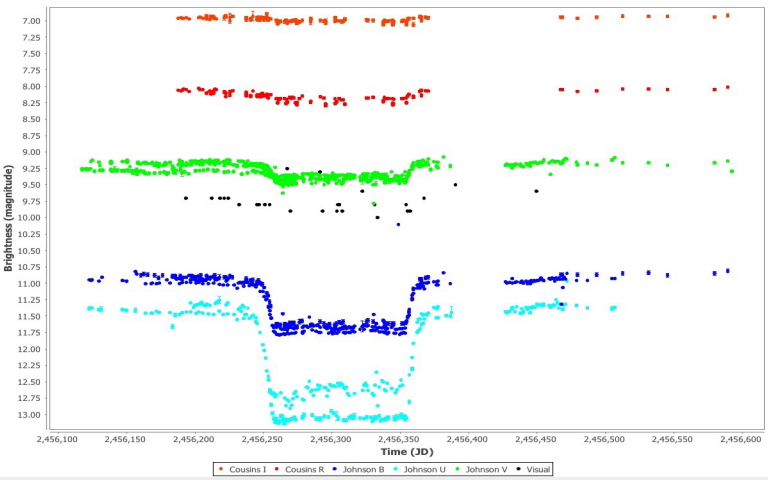
A significant mystery regarding the dwarf nova **SS Cygni** was resolved last year, thanks to key assistance from AAVSO observers. Based on the known distances to this type of cataclysmic variable, the method by which matter is transferred from one star to the other of the pair appeared to work for all other such pairs but not for SS Cyg, bringing the theory behind the method into question. Following on the discovery of radio emission from SS Cyg in 2008 by Dr. Elmar Koerding (Radboud Universiteit Nijmegen, Netherlands) and colleagues including AAVSO's Dr. Matthew Templeton (in which discovery AAVSO observers again played a key part), Dr. James Miller-Jones (International Centre for Radio Astronomy Research, Curtin University, Perth, Western Australia) and colleagues wanted to measure the distance to SS Cyg using radio observations, something never done before. Since the radio emission occurs only at the beginning of an outburst of SS Cyg, it was essential to know the moment the system went into outburst. Outbursts of SS Cyg occur unpredictably, so AAVSO observers carefully monitored SS Cyg nightly, watching for an outburst that would fall into one of the astronomers' observing windows and observing during the all of outbursts. When SS Cyg went into outburst in October 2012 and that outburst was confirmed, Matthew Templeton notified Dr. Miller-Jones and he triggered the radio observations with extensive radio telescope assemblies in the USA and England—all within a few hours. Their successful observations – thanks to AAVSO observers—proved the earlier distance measurement wrong, and the new measurement resolved the problem of SS Cyg and the conflict with theory. The findings were published in the journal *Science*, with Matthew Templeton and Elizabeth Waagen as co-authors.

AAVSO observers assisted Dr. Michael Shara (American Museum of Natural History, Columbia University) throughout the year in his Hubble Space Telescope (HST) campaign on the dwarf nova **U Gem**. They monitored it closely and obtained nightly observations, reported outbursts promptly and observed them thoroughly, and provided meticulous visual observations and multicolor photometry before, during, and after sets of observations of U Gem made with HST. AAVSO coverage of U Gem, and our close communications with Dr. Shara during the year, enabled him to schedule the observations with HST, to reassure the HST schedulers that the telescope would not be endangered because AAVSO observations had shown U Gem would not be in outburst during the HST observations, and to correlate his HST spectroscopic observations with its optical behavior.

In July, Dr. Shara wrote: "The AAVSO campaign remains enormously helpful. I certainly do need and want it to continue until after the next observed U Gem eruption, for

the following reasons. We obtained six of seven awarded HST spectrographic orbits, starting immediately after U Gem returned to quiescence in January 2013. U Gem then remained at quiescence much longer than expected through May—which we could only have known about from the excellent AAVSO coverage—and so we couldn't target U Gem for its last HST orbit…before it entered HST's exclusion zone in late May. U Gem becomes available again for HST observations on September 10. It would be helpful to know of any eruptions between now and then; but it's CRITICAL to know of an eruption after September 10, and to know when U Gem returns to quiescence. We will observe it with HST two days later." U Gem finally went into outburst in November and Dr. Shara's HST observations were carried out in early December. "He subsequently wrote: "I am overwhelmed at the quality and quantity of AAVSO data on U Gem; how wonderful! My deep thanks to…[the more than 100 AAVSO observers who have contributed to this campaign], and [particularly to the] observers…who did a splendid job [providing multicolor coverage on the actual day of the HST observations]...."

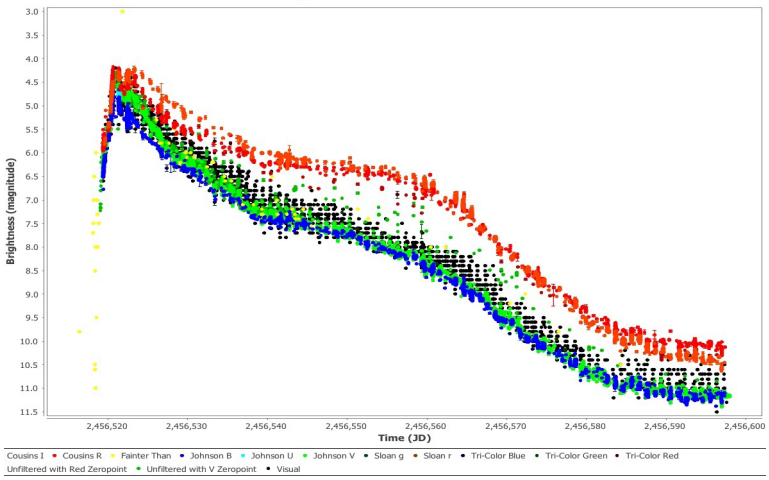
The eclipsing binary **AZ Cas** was the focus of a campaign organized by Cezary Galan (University of Torun, Poland) and brought to the AAVSO's attention by Jeffrey Hopkins (Phoenix, Arizona). To capture the eclipse, which occurs every ten years, AZ Cas was observed before and after as well as throughout the eclipse of mid-November 2012 through late February 2013. Multicolor photometry and visual observations were obtained through the dedicated efforts of observers, including many from the AAVSO, resulting in a beautiful UBVRI light curve (see below) which shows the complete eclipse. The light curve also shows the behavior in each band, with a very deep eclipse occurring in U, an increasingly shallow eclipse through the BVR bands, and barely a trace of an eclipse in I. The data are being analyzed by Dr. Galan.



AZ Cas August 14 through 2014 October 31. This light curve from the AAVSO International Database includes 2,433 multicolor observations contributed by 17 observers worldwide. The zero-point differences, which will be reconciled as part of the data analysis, may be seen for some observers.

The triple system **b Per** was the subject of another interesting campaign last year. Dr. Bob Zavala (U.S. Naval Observatory, Flagstaff) and colleagues recently resolved the three components of the system as two stars orbiting each other closely and this pair orbiting with the third star. Their analysis said that eclipses of the pair by the third star might be visible to us; being able to observe and study eclipses is important for investigating the evolutionary state of the close binary components. They asked AAVSO observers to monitor b Per, particularly during the time they predicted for one or possibly two eclipses. Our observers obtained multicolor photometry that showed the eclipses, but the eclipses occurred more than a week later than predicted! Dr. Zavala and colleagues are analyzing the data.

A bright nova made things very exciting in August and September. On August 14, **Nova Delphini 2013** (later named **V339 Del**) was discovered at magnitude 6.8. It brightened rapidly, reaching a maximum visual brightness of 4.2 on August 16. The accompanying light curve from the AAVSO International Database shows its behavior through the end of the fiscal year. Its brightness and its placement near the equator allowed a great many observers in both hemispheres to observe it; its placement within the constellation was even excellent for beginners to locate it. This was the first really bright nova in several years, and many new observers signed up for AAVSO Observer Initials to make their first visual observations for the AAVSO—for the first few weeks we processed 30–40 new observers per week! It also brought back many long-dormant variable star observers, and we look forward to some of them continuing to make observations again.



V339 Del (Nova Del 2013) from discovery August 14 through October 31. This light curve from the AAVSO International Database includes 59,733 multicolor observations contributed by 492 observers worldwide.

V339 Del was also the first bright nova since technology has advanced to bring DSLR cameras into widespread use, and many observers made their first DSLR observations targeting the nova. Even phone cameras were used to snap an image that could be reduced to a magnitude! The amateur spectroscopy community received a real boost

from V339 Del, again because it was so bright and well placed that it made an ideal target for both new and experienced spectroscopists. Coverage has been superb, from visual to multicolor PEP, CCD, and DSLR to spectra! V339 Del continues to decline slowly and observers to follow it as the new fiscal year progresses.

Details of all observing campaigns and related information may be found on the AAVSO website (http://www.aavso.org/observing-campaigns). The campaigns are exciting and impressive both in their scope and in the level of contributions the professional astronomers believe AAVSO observers can make to their research.

In support of the many campaigns and discoveries of new objects, the Sequence Team, led by Mike Simonsen, created hundreds of new and revised sequences during the year. A typical sequence for a new object is created and uploaded within hours of notification, a far cry from the days before the automated AAVSO Variable Star Plotter (VSP) utility, when a new sequence could take days or weeks to propagate through the community. This rapid development and distribution of sequences is particularly valuable for the many new cataclysmic variables being discovered by the surveys, and for the dozen new novae that went into outburst this past year.

Other Events

Albert Jones (JA) was presented with the AAVSO Merit Award by Director Arne Henden at his home in New Zealand

We have some sad news this year. Albert Jones, the most prolific visual observer in history, passed away in September. He was one of the nicest people and a quiet, unassuming personality, yet was famous worldwide. I feel honored to have met him. Albert won the AAVSO Merit Award in 2008, and I had the pleasure of presenting him with it in late 2012.

Councilor Chryssa Kouveliotou, a long-time researcher at NASA Marshall Space Flight Center who studies exotic objects like Magnetars, was elected to the National Academy of Sciences in May. Out of the approximately 10,000 professional astronomers in the U.S., only 137 are members of the Academy. Membership is generally considered one of the highest honors that a scientist can receive. My heartfelt congratulations to Chryssa!

The NASA Kepler telescope lost another reaction wheel and had to shut down its normal survey, after nearly four years of exquisite photometry. The mission planners are currently deciding on another use of the satellite, with new

observations to begin in mid-2014. The European Space Agency satellite Gaia was ready to launch at the end of the fiscal year, and at the time of this writing, was successfully launched and on its way to its destination. Both Kepler and Gaia will play important roles for variable star astronomy in the coming future.

We had two bright comets this year—Lovejoy and ISON (great on the inbound leg!). What impressed me the most was the advent of high-quality astrographs, large format cameras, and superior software. The pictures of these two comets that were posted on the web were stunning. I think the contribution from amateurs in all areas of astronomy continues to increase, and the fine details visible in these comet images will be of great value to the professional researcher.

Every couple of years or so, a bright Gamma-Ray Burst afterglow is seen. On occasion, the emission has been naked-eye brilliance. This year, GRB 130427A was found by the RAPTOR transient network to have a 7th magnitude afterglow. With rapid response by automated amateur telescopes, such transient objects can be studied in detail.

A 32-inch mirror that was donated by Mario Motta (his first 32-inch mirror!) for Shiaperelli Observatory arrived safely in Italy. Ulisse Munari worked with Paolo Valise in installing the mirror in the telescope, intending to use it for spectroscopy. Unfortunately, tests indicated that the mirror figure was extremely poor. After discussing the matter with Mario, the conclusion was reached that the sandblasted back of the mirror (done to lightweight it) had "relaxed" over the years while the mirror was stored, and warped the shape. Discussions with Italian opticians are underway, but the likely outcome is that the mirror will not be useful for their project. However, the publicity over the donation of the mirror was a positive effect, and the team has been able to find funding to purchase a new mirror.

Katy Fortak (Germany) stayed at the Feibelman Guest Suite while attending a meeting in Boston. She also talked with staff about some aspects of her observing and of her local astronomy club.

The Red Sox won the World Series! Wonders never cease.…

Staffing

We had two summer students at Headquarters this year as Margaret Mayall Assistants: Anisha Sharma, who came to us from Bennington College; and Shouvik Bhattacharya, who just graduated from Minnesota State University. Anisha and Shouvik helped me with day-to-day processing of AAVSOnet and APASS data.

Sebastian Otero visited Headquarters from Buenos Aires for a week, acquainting himself with the DSLR manual (he will be doing the Spanish translation) and working on some VSX issues.

Sara Beck's husband, John O'Neill, is retiring soon, and they expect to be spending most of their time in New England in the future and less time in Ireland. We will welcome her presence in the office on a more regular basis, rather than interacting via phone, email, and Skype!

Lauren Rosenbaum, our Administrative Assistant, is leaving the AAVSO to pursue her career. She worked with us for the past two years while completing her graduate school work and internships, but now is heading to a full-time position in child psychology. It is rare to have someone so capable and organized pass through our doors. We will miss her!

As you may know, I am retiring in early 2015. I turn 65 then and will have been heading the AAVSO for ten years. President Mario Motta chose a group of eight qualified AAVSO members and supporters to form a search committee for the new Director. Kevin Marvel agreed to chair this committee, and is performing a wonderful job. Applications have closed at the end of FY2012–2013, and the selection process is underway. Keep tuned to the web page to see periodic updates!

Other than these changes, headquarters staffing has remained constant. We have ten full-time employees, one contract employee, and three part-time staff members. All permanent employees are described on our website at http://www.aavso.org/aavso/about/staff.shtml. I encourage you to read about these folk that support the members and observers; it is a really nice and efficient staff at Headquarters!

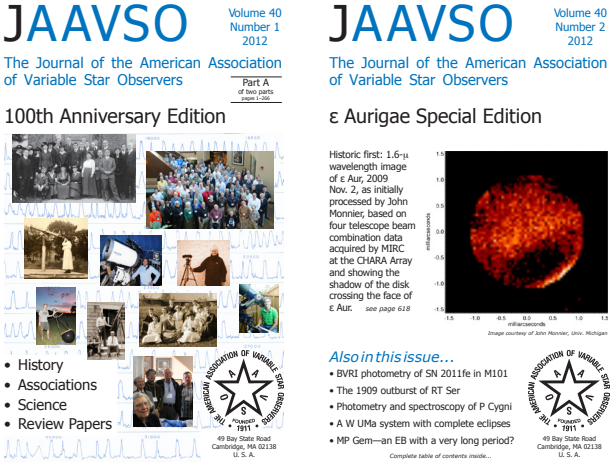
Publications

Each year the AAVSO provides variable star-related material for the Royal Astronomical Society of Canada's *Observer's Handbook*. For the 2014 issue, Matt Templeton wrote the Variable Star of the Year article, and Elizabeth Waagen updated the variable star tables with current maxima and minima predictions.

Mike Saladyga took the twenty Centennial posters he created (previous Presidents, Council members, prolific observers, etc.) that cover our Hoffleit Conference Center walls, and created pdf files that you can download from our website. These are fascinating to study; there have been very good people connected to the AAVSO over the years!

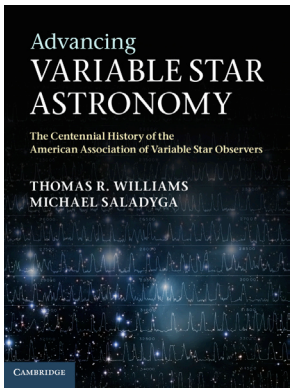
Volume 40 of *JAAVSO* was unique. Number 1, the Centennial issue (including invited

review papers on variable stars), was published in June 2012. Number 2, published in December, was devoted to the rare eclipse of epsilon Aurigae and the related international campaign to which citizen scientists as well as professional astronomers could make critical contributions. The 618 pages of Number 1 had to be bound in two parts (A and B) while the 522 pages of Number 2 just fit into one binding. Large issues means lots of editing, reviews, and layout work by Mike Saladyga, Elizabeth Waagen, Matt Templeton, and our *JAAVSO* editor, John Percy. I think the three books of this volume should be on everyone's bookshelf! Volume 41, Number 1 was published in June 2013. At 156 pages, it is a very substantial issue of *JAAVSO* even if it seems small by comparison to Volume 40.



JAAVSO Volume 40, Numbers 1 (Part A cover shown here) and 2, 2012

Many *eJAAVSO* articles were posted. We posted 19 Alert Notices and 76 Special Notices. Elizabeth completed maxima and minima predictions for 381 long period variables in *AAVSO Bulletin 76*. The AAVSO released the annual eclipsing binary/RR Lyrae stars ephemerides as well as 12 issues of the monthly *Solar Bulletin*. Several new translations of the *Visual Observing Manual* were made, including Chinese (by Tao Fan-Lin, Director of the Taipei Association of Astronomy Now). The manual was updated in March by Sara Beck (with contributions by Mike Simonsen, Elizabeth Waagen, and Matt Templeton) with the revisions translated into Hungarian (Peter Molnar and Dr. Laszlo Kiss), French (Dominique Naillon), and Farsi (Fatemeh Bahrani). Four issues of the *AAVSO Newsletter* were published.



The AAVSO Centennial History

There were 36 staff publications (Henden, Kinne, Otero, Price, Simonsen, Templeton, Waagen; *PASP*, *AJ*, *JAAVSO*, etc.). We noted that 119 papers in journals such as *Astronomy and Astrophysics*, *MNRAS*, *ApJ*, *AJ*, *PASP*, etc. were published using AAVSO data and assistance. The actual number is larger than this, as many posters and papers at AAS meetings use our light curves in their presentations.

If you haven't ordered your copy of the Williams/Saladyga book, *Advancing Variable Star Astronomy*, you should consider doing so. It is an excellent history of the AAVSO and of a Citizen Science organization in general.

Travel and meetings

Mike Simonsen did considerable travel for the AAVSO this year. He went to New Mexico in November to pick up the AAVSOnet telescopes, and distributed them to their new sites elsewhere in the southwest. He also stopped by Tom Smith's place in New Mexico and looked over the APASS and Morgan installations, and stopped in to visit Bob Stine at his California Ranchito. A few months later, Mike returned to Tom Smith's observatory to work on the Morgan telescope building. Mike was also the banquet speaker at the Big Bear Society for Astronomical Sciences (SAS) meeting, talked at the Rocky Mountain Star Stare, and gave an invited talk at the annual Mensa gathering in Texas.

Mike and I attended the "Horacefest," a special variable-star meeting at Michigan State to honor Horace Smith, who was retiring, and who has been an observer and sustaining member of the AAVSO for many years. There were some good papers, and lots of friendly conversations. I combined this meeting with the Indianapolis AAS meeting. A few weeks later, I traveled to the Southwest to work on various telescope systems (NMSU Tortugas Mountain Observatory, APASS/Morgan at DRO, setting up 2GSS on Anderson Mesa at Flagstaff). I also gave a paper and a workshop at the Giants of Eclipse meeting in Monterey, combining that trip with visits to Las Cumbres and Planewave.

In November, I took a personal vacation to Australia to view the total solar eclipse. While there, I was able to meet with several AAVSO members and observers. Linda and I then traveled to New Zealand, where I met with Albert Jones and also worked on the Mt. John AAVSOnet telescope.

3rd Solar Workshop attendees

Susan Oatney and Rodney Howe attended the 3rd Solar Sunspot Number Workshop at the National Solar Observatory Headquarters in Tucson. Rodney also went to the Brussels SSN workshop last year to represent the AAVSO sunspot observers.

We're webcasting the membership meeting part of the AAVSO Spring and Annual meetings, with good feedback. Thanks to Doc Kinne and Rebecca Turner for setting this up! At the Annual meeting, we also had a get-together for the variable star Peltier Award recipients, and had some good talks with Carroll Iorg (president of the Astronomical League) on closer ties between our organizations. Carroll presented longtime AAVSO member-observer John Bortle with his AL Peltier Award, a well-deserved honor for this active visual observer and mentor.

Looking Towards the Future

Coming up over the next fiscal year will be a number of improvements in support of our observers, with more consistent interfaces to the web software. We will be adding more precision photometry to the comparison star database. APASS will complete its secondary 2-observation survey. More observing campaigns will be announced. The AAVSOnet robotic telescope network will be expanded, with all of the 24-inch telescopes coming on-line. Hopefully some of our submitted grants will be awarded. All in all, I think it will be another great year for the AAVSO!

Acknowledgements

This is not a one-person show, or even a dozen-person show. Everyone who has contributed data, made a monetary donation, volunteered their time and energy, has made this organization the success that it is. We "stand on the shoulders of giants" that came before us and built the foundation of the organization. Clint Ford contributed enormously to the organization, which is why his name bears such prominence everywhere. Previous Directors organized the association and had the vision for its future. The Council guides the AAVSO, volunteering their efforts to make the organization financially solvent and relevant. Our Committee and Section chairs handle specific areas of interest, working with enthusiastic observers and making reports to the membership and Council. Others work quietly behind the scene, acting as scientific advisors to programs, writing important software, or participating in important projects such as the Sequence Team. Finally, many institutions and government agencies see our research important enough to provide financial support. Without all of these people, the AAVSO would not exist.

Observer Totals

Our special appreciation and thanks go to our enthusiastic and dedicated observers, who are the heart of the AAVSO and whose ongoing efforts make this association vital to variable star research. Listed on the following pages are the observation totals that we have received at Headquarters.

Table 1. AAVSO Observer Totals 2012–2013 by Country.*

Country	No. Observers	No. Obs.	Country	No. Observers	No. Obs.	Country	No. Observers	No. Obs.
unknown	2	18	France	39	47717	Philippines	1	115
Argentina	23	228	United Kingdom	48	75609	Poland	32	8945
Austria	5	1174	Greece	9	2111	Portugal	3	1984
Australia	32	79352	Hong Kong	1	192	Romania	12	5146
Belgium	27	438472	Croatia	3	11	Serbia	1	432
Bulgaria	3	347	Hungary	42	8874	Russian Federation	13	1821
Bermuda	1	275	Ireland	3	230	Sudan	1	1
Bolivia	2	177	Israel	1	56	Sweden	13	20347
Brazil	31	2549	India	3	429	Slovenia	3	118
Belarus	4	631	Italy	37	39505	Slovakia	3	2297
Canada	59	28419	Japan	4	833	Tunisia	1	8
Switzerland	4	98	Lithuania	1	1	Turkey	3	11986
Chile	1	2	Luxembourg	1	11	Taiwan, Province of China	2	83
China	17	859	Morocco	1	1	Ukraine	4	21712
Czech Republic	3	32	Mexico	2	751	United States	279	487086
Germany	40	19219	Nicaragua	1	5	Uruguay	1	6
Denmark	8	1427	Netherlands	16	3974	South Africa	3	1312
Spain	54	150491	Norway	3	292			
Finland	14	66754	New Zealand	9	4367	TOTAL	929	1538892

Table 2. AAVSO Observer Totals 2012–2013 USA by State or Territory.*

State	No. Observers	No. Obs.	State	No. Observers	No. Obs.	State	No. Observers	No. Obs.
APO/FPO	1	11614	Kentucky	1	6	Oklahoma	3	190
Alabama	1	108	Maine	4	109	Oregon	6	53727
Arizona	12	4747	Maryland	4	93	Pennsylvania	10	2425
Arkansas	6	7633	Massachusetts	22	40332	Rhode Island	2	31
California	36	44439	Michigan	9	6136	South Carolina	4	108
Colorado	6	2246	Minnesota	4	569	Tennessee	2	37
Connecticut	4	498	Mississippi	1	122	Texas	20	3708
Delaware	1	17	Missouri	3	13318	Utah	2	482
District of Columbia	1	23	Montana	1	36746	Vermont	4	24
Florida	10	31015	Nebraska	2	55	Virginia	5	247
Georgia	3	3666	Nevada	1	399	Washington	5	213
Hawaii	2	1146	New Hampshire	6	9622	West Virginia	2	1154
Idaho	1	2	New Jersey	3	60	Wisconsin	7	29283
Illinois	11	39976	New Mexico	8	95320			
Indiana	9	35868	New York	14	5586	TOTAL	279	487086
Iowa	2	1244	North Carolina	4	39			
Kansas	4	451	Ohio	10	2252			

** Totals reflect observations made during fiscal 2012–2013 and do not include historical data (data preceding fiscal 2012–2013) submitted during fiscal 2012–2013.*

Table 3. AAVSO Observers, 2012–2013.*

Code	Org.	Name	No. Obs.	Code	Org.	Name	No. Obs.
AAP		P. Abbott, Canada	1047	BCP	20	C. Beech, United Kingdom	213
AAN	02	A. Abe, Germany	113	BZX		A. Beltran, Bolivia	174
AJOA		J. Adamson, California	3	PNQ		R. Benavides Palencia, Spain	1343
ACN	13	C. Adib, Brazil	468	BHS		H. Bengtsson, Sweden	799
AHM		H. Adler, Massachusetts	1777	BDJB		D. Benn, Australia	48
ASA		S. Aguirre, Mexico	748	BTY		T. Benner, Pennsylvania	519
AFSA		F. Alfarp, Spain	775	BEB		R. Berg, Indiana	9
ACO	20	C. Allen, Sweden	1174	BRIC		R. Berg, District of Columbia	23
ADAB		D. Alling, California	1	BGMB		G. Bertani, Italy	597
AJC	13	J. Almeida, Brazil	25	BANC		A. Berthold, Austria	15
AJV	15	J. Alonso, Spain	423	BVG	18	G. Bianciardi, Italy	6
AMAA		M. Alsunni, Sudan	1	BRIA		R. Biernikowicz, Poland	237
ARC		R. Altenburg, Pennsylvania	149	BQM		M. Bignotti, Italy	141
AKV		K. Alton, New Jersey	45	BALB		A. Biheza, Belarus	19
AEPA		E. Alvarez, Argentina	8	BBI	05	B. Billiaert, Belgium	2069
AAX	13	A. Amorim, Brazil	1641	BLOA		L. Bing, China	100
AMG	13	M. Amorim, Brazil	12	BXN	01	M. Bisson, France	120
ADVA		D. Ananyev, Russian Federation	2	BXT	08	T. Bjerkgaard, Norway	232
AKG	19	K. Andersson, Sweden	39	BRAC		R. Black, Oklahoma	101
ARLA		R. Andersson, Sweden	25	BKL		J. Blackwell, New Hampshire	61
ALQ		L. Andree, Illinois	1	BVZ		J. Blanco Gonzalez, Spain	26
AAAA		A. Andreenko, Russian Federation	4	BLD	10	D. Blane, South Africa	1236
ASTA		S. Andrei-Marian, Romania	3	BWZ		E. Blown, New Zealand	1558
ACDA		C. Andrione, Argentina	9	BCAD		C. Blumenroether, Germany	19
ACAB		C. Anicetti, California	128	BDAC	27	D. Boan, Canada	2
AAM		A. Arminski, Poland	718	BJAA		J. Boardman, Wisconsin	169
ARJ		J. Arnold, Texas	50	BDEA		D. Bodano, Argentina	6
ARN	01	L. Arnold, France	161	BOH	02	D. Boehme, Germany	18
ATE		T. Arranz, Spain	50009	BHQ	29	T. Bohlsen, Australia	2304
ATI	03	T. Asztalos, Hungary	939	BVS		S. Bolzoni, Italy	22
AAUA		M. Audejean, France	793	BRJ		J. Bortle, New York	4712
ADI	02	D. Augart, Germany	248	BMF	27	M. Boschat, Canada	27
AAV		A. Avtanski, California	7	BBW		B. Bose, India	7
AANC		A. Ayiomamitis, Greece	1	BDLA		D. Boulet, Delaware	17
BJAN	03	J. Bacsa, Hungary	10	BMU	04	R. Bouma, Netherlands	30
BOZ	03	B. Bago, Hungary	423	BDG	20	D. Boyd, United Kingdom	5907
BPEA		P. Bagyinszki, Hungary	28	BGAC		G. Boyle, United Kingdom	1
BJEA		J. Baker, Kansas	4	BMK		M. Bradbury, Indiana	139
BJMB		J. Baker, Michigan	6	BXS		S. Brady, New Hampshire	59
BFX		R. Baker, Ohio	4	BJFA		J. Brandie, China	95
BWW		W. Bakewell, California	3	BNW	02	W. Braune, Germany	19
BFO	03	J. Bakos, Hungary	1132	BQC	01	J. Breard, France	21
BFU	18	F. Baldanza, Italy	6	BTB		T. Bretl, Minnesota	108
BCDA	27	C. Baldock, Canada	10	BHA	02	H. Bretschneider, Germany	208
BALJ	14	A. Baldwin, New Zealand	42	BMI		M. Brewster, Texas	3
BIV	03	I. Balogh, Hungary	5	BQE	27	E. Briggs, New York	38
BGZ		G. Banialis, Illinois	177	BJFB		J. Briol, Minnesota	11
BTAD		T. Banys, Poland	63	BLP	03	P. Brlas, Hungary	22
BJOD		J. Barentine, Texas	4	BAVB		A. Broceno, Spain	20
BSR	18	S. Baroni, Italy	142	BPEB		P. Brock, United Kingdom	896
BPO		D. Barrett, France	578	BOS	05	E. Broens, Belgium	42
BQ	03	L. Bartha, Hungary	1719	BXV	15	X. Bros Caton, Spain	2
BWAA		W. Basso, Canada	9	BPR	01	P. Brunet, France	1
BBA		B. Beaman, Illinois	2110	BOA	01	A. Bruno, France	10144
BWX	27	A. Beaton, Canada	153	BISA	16	I. Bryukhanov, Belarus	535
BSJ		S. Beck, Massachusetts	4	BEP	04	E. Bus, Netherlands	1
BDQ		A. Bedard, Washington	91	BANH		A. Busato, Italy	292
BJS		J. Bedient, Hawaii	44	BIW		N. Butterworth, Australia	2634
BSI	27	S. Bedingfield, Canada	4	CAND	01	A. Cailleau, France	18

Table 3. AAVSO Observers, 2012–2013, cont.*

Code	Org.	Name	No. Obs.
CTOA		T. Calderwood, Oregon	44
CCB		C. Calia, Connecticut	321
CMN		R. Cameron, Australia	15
CMQ		P. Camilleri, Australia	516
CPN	27	P. Campbell, Canada	46
CMP		R. Campbell, Florida	852
CSHA		S. Campbell, Canada	38
CFRA		F. Campos, Spain	18
CEM	15	E. Capella, Spain	5
CQP		A. Capetillo Blanco, Spain	408
CADA	36	A. Cardoso, Brazil	66
CJMB		J. Carlini, Argentina	8
CALB		A. Carreno, Spain	3233
CROA		R. Carstens, New Zealand	8
CVEA		V. Casanova, Spain	13
CNY		A. Cason, Georgia	4
CLQ		L. Cason, South Carolina	9
CLAC		L. Cassignard, France	15
JJGA		J. Castano, Spain	6
CJE	01	J. Castellani, France	556
CKN		K. Castle, Arizona	10
CWO		W. Castro, Ohio	51
CDZ		D. Cejudo Fernandez, Spain	58290
CQJ		J. Centala, Iowa	942
CKIA		K. Chan, Canada	1
CNT		D. Chantiles, California	384
CGF		G. Chaple, Massachusetts	5
CDMB	27	D. Chapman, Canada	10
CGRA		G. Chapman, Kansas	281
CJDA		J. Chase, New York	12
CTIB		T. Chen, China	11
CXIA		X. Chen, China	94
CKJ		J. Cheng, Pennsylvania	1
CQS		S. Cheng, China	87
CCY		C. Chiselbrook, Georgia	3654
CGMA		G. Citron, Massachusetts	10
CLK		W. Clark, Missouri	1
CWP		W. Clarke, Arizona	428
CPE		P. Closas, Spain	361
CKH	05	H. Coeckelberghs, Belgium	2
CFO		J. Coliac, France	23
CDK		D. Collins, North Carolina	22
CME	18	E. Colombo, Italy	79
CTIA		T. Colombo, Italy	1047
CDSA		D. Conner, United Kingdom	1389
CEMB	01	E. Conseil, France	1
CMJA		M. Cook, Canada	6688
CCHB		C. Cornelissen, Netherlands	6
CLZ		L. Corp, France	3881
CAI		A. Correia, Portugal	990
CMM		M. Costello, California	1931
CKLA		K. Cotar, Slovenia	88
CKBA		K. Cote, Massachusetts	12
CJGA		J. Cottle, California	50
COV		V. Coulehan, New York	10
CWD		D. Cowall, Maryland	1
CLX		L. Cox, Canada	13
CLEA		L. Crary, Florida	1
CTX		T. Crawford, Oregon	1263
CAWA		A. Crider, North Carolina	1
CBLA		B. Crosby, South Carolina	10
CMJC		M. Crowe, United Kingdom	39
CTI	03	T. Csorgei, Hungary	9
CSM	03	M. Csukas, Romania	913
CKB		B. Cudnik, Texas	2713
CIAA		I. Curtis, Australia	5623
CUU		J. Curto Amigo, Spain	6
DAH	08	H. Dahle, Norway	10
DMI	02	M. Dahm, Germany	2
DANB		A. Dantas, Brazil	1
DGSA	20	G. Darlington, United Kingdom	8300
DAM	06	A. Darriba Martinez, Spain	239
DFAA		F. Davie, Italy	35
DJK		J. Davis, Nevada	399
DMA		M. Davis, South Carolina	30
DTTA		T. De France, France	4367
DROC	05	R. De Laet, Belgium	53
DENA		E. De Miguel, Spain	189
DPP		P. De Ponthiere, Belgium	9631
SWQ	13	W. De Souza, Brazil	49
DSJ	13	J. De Souza Aguiar, Brazil	5
DVJA	01	J. De Vanssay, France	2
DVW	05	W. De Vriese, Belgium	7
DSJA		S. Dean, United Kingdom	52
DJYA		J. Debnath, Canada	1
DMIB		M. Deconinck, France	54
DDAA		D. Dedrickson, Oregon	44
DFR	27	F. Dempsey, Canada	32
DDE		D. Denisenko, Russian Federation	13
DANC		A. Denisova, Lithuania	1
DAT		A. Derdzikowski, Poland	1597
DNO		O. Deren, Poland	1118
DAND		A. Deshpande, India	419
DJID		J. Devis, Argentina	6
DSI		G. Di Scala, Australia	7054
DRG		R. Diethelm, Switzerland	3
DRD		R. Dietz, Colorado	12
DENB		E. Diez Alonso, Spain	1
DLA		A. Dill, Kansas	93
DRSA		R. Dombroski, Connecticut	2
DNLA		N. Donahue, Massachusetts	10
DRDB		R. Dos Santos, Brazil	2
DRDA		R. Dos Santos, Brazil	3
DDJ		D. Dowhos, Canada	16
DHEA		H. Doyle, Massachusetts	10
DSE		S. Du, China	19
DPV	09	P. Dubovsky, Slovakia	2054
DROB		R. Dudley, Vermont	3
DMO	01	M. Dumont, France	459
DGTA		G. Duranko, New Hampshire	5
DMPA		M. Durkin, New York	356
DFEA		F. Dutton, Michigan	75
DKS		S. Dvorak, Florida	28076
DGP		G. Dyck, Massachusetts	1171
EMAA		M. Eaves, United Kingdom	315
EHEA		H. Eggenstein, Germany	55
EMA		M. Eichenberger, Switzerland	14
EKJA		K. Eknaian, Rhode Island	8

Table 3. AAVSO Observers, 2012–2013, cont.*

Code	Org.	Name	No. Obs.
ELE		L. Elenin, Russian Federation	26
EPE	01	P. Enskonatus, Germany	119
EJO	03	J. Erdei, Hungary	109
EEY		E. Erdelyi, California	2314
ELTA	06	L. Espasa, Spain	116
ERW	14	R. Evans, New Zealand	8
FWJA		W. Fahey, Nebraska	5
DEFA		E. Faustino, Brazil	8
FSYA		S. Fernandez, Argentina	6
FJAC	13	J. Ferreira, Brazil	8
FRF	03	R. Fidrich, Hungary	16
FJAD		J. Fiola, Canada	2
FALA		A. Fiorilo, Argentina	8
FSJ	01	J. Fis, France	166
FGU	02	G. Flechsig, United Kingdom	1
FDKA		D. Flippo, Arkansas	489
FLE		L. Florin, Romania	62
FDA	03	A. Fodor, Hungary	9
FSE	18	S. Foglia, Italy	5
FTKA		T. Fok, Hong Kong	192
FJQ		J. Foster, California	6090
FDU		D. Fowler, Ohio	14
FXJ		J. Fox, New Mexico	243
FJCA		J. Frechem, Virginia	1
FRMA		R. Freed, California	381
FML	04	M. Fridlund, Netherlands	4
FGIA		G. Frustaci, Italy	138
FMG		G. Fugman, Nebraska	50
FRTA		R. Fuller, Texas	18
FRIC		R. Furgoni, Italy	29591
GBZ	21	O. Gabzo, Israel	56
GHT	27	G. Gaherty, Canada	1
GFEA		F. Gallego, Spain	20
GGL	18	G. Galli, Italy	4
GTN		T. Gandet, California	169
GFDB	06	F. Garcia, Spain	32
GAA		P. Garey, Illinois	82
GALB		A. Garofide, Romania	87
GLRA		L. Gaudiosi, California	17
GKOA		K. Gazeas, Greece	84
GJCA		J. Geary, Texas	9
GKI		K. Geary, Ireland	89
GMD		M. Geldorp, Canada	20
GKOB	05	K. Geukens, Belgium	3
GQR		R. Gherase, Romania	9
GAO		A. Giambersio, Italy	4
JMG		M. Gibaja, Spain	1
GGU	04	G. Gilein, Netherlands	565
GSEB		S. Girard, Oklahoma	81
GMY		M. Glennon, Ireland	3
GZN		A. Glez-Herrera, Spain	4224
GLG		G. Gliba, Maryland	46
GGUB		G. Glitscher, Germany	10
GFB	31	W. Goff, California	19343
GSAB		S. Gomez, Spain	2
GOT	06	T. Gomez, Spain	3961
GED		E. Goncalves, Brazil	7
GEZA		E. Gonzalez, Argentina	5
GFDA	27	F. Gonzalez, Canada	7
GCJ	07	J. Gonzalez Carballo, Spain	300
GDIA		D. Gonz·Lez GarcìA, Spain	20
GJIA		J. Goodridge, Canada	1
GENB		E. Gozzoli, Italy	17
GHN		J. Graham, Ohio	18
GKA		K. Graham, Illinois	5263
GPE		.. Grainger Observatory, New Hampshire	9
GRL	08	B. Granslo, Norway	50
GPMA	27	P. Gray, Canada	2
GNJ		J. Green, Canada	7
GDY	27	D. Grey, Canada	1
GVD	16	V. Grigorenko, Russian Federation	28
GOC		R. Grochowski, Poland	8
GCO		C. Gualdoni, Italy	2867
GUB	05	G. Gubbels, Belgium	6
GFRB		F. Guenther, Maryland	37
GTEA	27	T. Gui, Canada	1
GPIA		P. Guzik, Poland	18
GGX	01	G. Guzman, France	172
HCS	03	C. Hadhazi, Hungary	761
HDH	03	S. Hadhazi, Hungary	91
HTY		T. Hager, Connecticut	173
HKB		B. Hakes, Illinois	203
HPIA		P. Hallsten, Sweden	5127
HTDA		T. Halstead, Oregon	14
HMB	05	F. Hambsch, Belgium	418020
HDX		D. Hands, North Carolina	8
HPL		P. Hansen, Denmark	3
HMF		M. Hardies, Florida	5
HBB		B. Harris, Florida	789
HMQ		M. Harris, Georgia	8
HSTA		S. Harrold, Texas	1
HHU	05	H. Hautecler, Belgium	187
HAB		R. Hays, Illinois	590
HMH		M. Heald, APO/FPO	11614
HPGA	27	P. Heath, Canada	5
HBAA		B. Heinemans, Netherlands	1
HGBA	03	G. Heitler, Hungary	11
HQA		A. Henden, Massachusetts	5660
HPMA		P. Henrichs, Texas	49
HCW		C. Hergenrother, Arizona	49
HJUC		J. Herrero, Canada	1331
HMV		M. Hessom, California	72
HNDA		N. Hewitt, United Kingdom	13
HEY	05	B. Heyndrickx, Belgium	25
HKEB		K. Hills, United Kingdom	935
HIVA		I. Hinojosa Castro, Argentina	9
HDHA		D. Hinzel, Virginia	17
HJX	13	J. Hodar Munoz, Brazil	1
HEK	11	E. Hoeg, Denmark	18
HFF		T. Hoffelder, Maine	4
HDF		D. Hohman, New York	1
HXA		A. Hollander, California	21
HGUA		G. Holmberg, Sweden	5191
HKAA		K. Honkova, Czech Republic	12
HOO	04	G. Hoogeveen, Netherlands	85
HJG		J. Horne, California	50
HJZ		J. Horne, California	538
HFMA		F. Hornung, Chile	2

Table 3. AAVSO Observers, 2012–2013, cont.*

Code	Org.	Name	No. Obs.
HSOA		S. Hotea, Romania	5
HSP	14	S. Hovell, New Zealand	2353
HOA		A. Howell, Florida	517
HSW		S. Howerton, Kansas	73
HJA		J. Hudson, California	21
HUR	20	G. Hurst, United Kingdom	1488
HUZ		R. Huziak, Canada	85
ILE	03	E. Illes, Hungary	290
IPA	12	P. Ingrassia, Argentina	13
IMEA		M. Irrera, Argentina	12
ILUA		L. Izzo, Italy	28
JJB	11	J. Jacobsen, Denmark	13
JMA		M. Jacquesson, France	75
JTP	01	P. Jacquet, France	82
JAT	03	T. Jakabfi, Hungary	1
JDAA		D. Jakubek, Poland	43
JNDA		N. James, United Kingdom	507
JM		R. James, New Mexico	53495
JZO	03	Z. Jankovics, Hungary	96
JJEA		J. Jenkins, New Mexico	24
JRBA		R. Jenkins, Australia	423
JGE	06	G. Jimenez Lopez, Spain	54
JDOA	27	D. Johns, Canada	2
JSJA	20	S. Johnston, United Kingdom	25
JON	05	K. Jonckheere, Belgium	4
JCN	20	C. Jones, United Kingdom	77
JJI		J. Jones, Oregon	52192
JBRA		B. Jordan, Tennessee	4
JPG		P. Jordanov, Bulgaria	231
JLZ	03	L. Juhasz, Hungary	187
KMY		M. Kaczmarech, Brazil	2
KFRA	02	F. Kahle, Germany	47
KPK		P. Kalajian, Maine	10
KCI	03	C. Kalup, Hungary	10
KAM	02	A. Kammerer, Germany	32
KSOA		S. Kamoun, Tunisia	8
KTU		T. Kantola, Finland	22987
KSF		S. Karge, Germany	33
KKJA	19	K. Karlsson, Sweden	27
KTHA	19	T. Karlsson, Sweden	3487
KBJA		B. Karr, Massachusetts	11
KEI		E. Kato, Australia	52
KBJ		R. Kaufman, Australia	27
KJMB		J. Kay, Vermont	14
KFAB		F. Kazmierski, Wisconsin	101
KMQ	06	M. Kearns, Spain	8
KPI	17	P. Kehusmaa, Finland	671
KJSA		J. Kendall, New York	16
KSH	29	S. Kerr, Australia	1
KSZ	03	S. Keszthelyi, Hungary	119
KJMA		J. Ketchum, Missouri	6
KKX		K. Kida, Poland	64
KRB		R. King, Minnesota	445
KRAA		R. King, Virginia	157
KSJ	27	S. Kinsella, Canada	4
KMM	09	M. Kititsa, Ukraine	6
KPC		P. Klages, United Kingdom	3
KKAA		K. Klindt-Jensen, Denmark	465
KRAB		R. Kneip, Luxembourg	11
KCD	20	C. Knight, New Zealand	375
KGT		G. Knight, Maine	12
KSP		S. Knight, Maine	83
KJAE		J. Kobryn, Poland	34
KLO		L. Kocsmaros, Serbia	432
KRV		R. Koff, Colorado	808
KHL		M. Kohl, Switzerland	50
KRS		R. Kolman, Illinois	650
KERA		E. Kolodziejski, New Jersey	8
KMA		M. Komorous, Canada	1830
KALA		A. Kong, Taiwan, Province of China	3
KTOA		T. Kooij, Netherlands	4
KGEB	05	G. Koops, Belgium	9
KOS	03	A. Kosa-Kiss, Romania	3603
KTJA		T. Kostelecky, Washington	92
KNIA		N. Kourounis, Greece	9
KVTA		V. Kousa, Spain	3783
KAF	03	A. Kovacs, Hungary	135
KFK		F. Krafka, Texas	11
KTC		T. Krajci, New Mexico	676
KWO	02	W. Kriebel, Germany	1057
KRK		K. Krisciunas, Texas	5
KRO		B. Krobusek, New York	9
KCSA		C. Krstanovic, New Hampshire	15
KTZ		T. Krzyt, Poland	286
KBA		B. Kubiak, Poland	133
KUC	01	S. Kuchto, France	571
KMAD		M. Kulich, Slovakia	1
KBO		R. Kuplin, Arizona	10
KAPB		A. Kurtz, Massachusetts	1
KSQ		S. Kuznetsov, Russian Federation	1495
LCR	15	C. Labordena, Spain	727
LTK	03	T. Lacko, Hungary	11
LHS		H. Lacombe, Canada	43
LBEA		B. Lafonte, Colorado	481
LSA	17	S. Lahtinen, Finland	3
LPB		P. Lake, Australia	98
LPEA		P. Lancaster, Australia	12
LDJ	27	D. Lane, Canada	4241
LTO	02	T. Lange, Germany	6
LCCA		C. Langley, Utah	1
LFK	11	F. Larsen, Denmark	4
LKR		K. Larsen, Connecticut	2
LTEA		T. Larson, Minnesota	5
LJOD		J. Lasuik, Canada	1
LBRA		B. Lawless, Canada	1
LZT		T. Lazuka, Illinois	763
LDRB		D. Lee, Texas	16
LVAA		V. Leftor, Ukraine	8
LMT		M. Legutko, Poland	98
LJY	17	J. Lehtinen, Finland	12
LCLA		C. Lemaire, Germany	8639
LPD	01	P. Lemarchand, France	91
LVY		D. Levy, Arizona	42
LJAB		J. Lewandowska, Poland	1
LRUA		R. Li, China	3
LMI		M. Lierl, Kentucky	6
LROA	18	R. Ligustri, Italy	1
LFEA		F. Limon, Spain	21

Table 3. AAVSO Observers, 2012–2013, cont.*

Code	Org.	Name	No. Obs.
LJDB		J. Lindsay, Texas	4
LMK		M. Linnolt, Hawaii	1102
LERA		E. Lipka, Poland	42
LSTA		S. Littlefair, United Kingdom	654
LCO		C. Littlefield, Indiana	25176
LSZ		S. Liu, China	3
LJX	01	J. Llapassat, France	21
LTE	20	T. Lloyd Evans, United Kingdom	2276
LMAB		M. Locke, New Zealand	12
LGV		G. Lopatynski, California	88
LJOC	06	J. Lopesino, Spain	63
LRD		D. Loring, Utah	481
LBG		G. Lubcke, Wisconsin	1582
LIRB		I. Lubiszewski, Poland	22
LMJ	17	M. Luostarinen, Finland	1460
MDW	27	W. Macdonald, Canada	3905
MSAB		S. Machado, Brazil	2
MRGA		R. Macphail, Canada	61
MMRT		M. Magris, Italy	31
MQA		A. Maidik, Ukraine	1308
MDAV		D. Majors, California	23
MVO	17	V. Makela, Finland	585
MJHN	20	J. Mallett, United Kingdom	30
MCPA		C. Maloney, Arkansas	2355
MESB	17	E. Mangeloja, Finland	5
MCHP	20	C. Mann, United Kingdom	27
MBJA		B. Mansdahl, Sweden	12
MKE		B. Manske, Wisconsin	440
MGK		G. Maravelias, Greece	2
MXI	18	A. Marchini, Italy	1112
MFB	18	F. Mariuzza, Italy	707
MTON	20	T. Markham, United Kingdom	837
MMN	18	M. Martignoni, Italy	991
UIS01		J. Martin, Illinois	502
MHWA		H. Martinez, Argentina	11
MVIA		V. Marttila, Finland	23
MSAC	27	S. Mastellotto, Canada	3
MAGA		A. Matavos, Argentina	12
MMIK		M. Matessa, California	2
MTH		H. Matsuyama, Australia	9615
MTM		M. Mattei, Massachusetts	1
MERA		E. Matys, Austria	18
MPR		P. Maurer, Germany	400
MMAJ		M. MaöEk, Czech Republic	4
MMAG		M. Mcallister, United Kingdom	4
MJHA		J. Mccammon, Colorado	194
MCOA		C. Mccann, Arkansas	87
MDP	27	P. Mcdonald, Canada	909
MTRA		T. Mcgoram, Australia	4
MJB		J. Mcmath, Arkansas	4669
MMAE		M. Mcneely, Indiana	7
MEP		D. Medicis, New York	5
MED	20	K. Medway, United Kingdom	769
MFR		F. Melillo, New York	20
MDUA		D. Menezes, Brazil	1
MLIB		L. Meng, China	7
MZK		K. Menzies, Massachusetts	28325
MDEN		D. Merrill, California	138
MANA		A. Mezzaa, unknown	11
MJOC		J. Michail, New Jersey	7
MMAI		M. Micheli, Italy	3
MPGA		P. Middlemiss, New Zealand	2
MVH		V. Mihai, Romania	165
MXL	20	R. Miles, United Kingdom	1
MIW	20	I. Miller, United Kingdom	17179
MRBA		R. Miller, Australia	585
MKYA		K. Mimikos, Greece	4
MZS	03	A. Mizser, Hungary	130
MRV		R. Modic, Ohio	227
MHH		J. Moehlmann, Pennsylvania	1079
MDAD		D. Moffett, South Carolina	59
MKSB		K. Mogk, Canada	1
MOD		D. Mohrbacher, Ohio	1
MMAK		M. Mollinari, United Kingdom	1
MISA		I. Monks, United Kingdom	19
MDPA		D. Monteiro, Portugal	4
MMOI		M. Montero Reyes Ortiz, Bolivia	3
MJOH	20	J. Moore, United Kingdom	328
MEV	01	E. Morelle, France	19696
MDJA		D. Moriarty, Australia	863
MOI	01	E. Morillon, France	15
MOW		W. Morrison, Canada	3940
MMX		M. Motta, Massachusetts	5
MPS	27	P. Mozel, Canada	81
MKCA		K. Mrazek, Austria	11
MMH		M. Muciek, Poland	112
MALG		A. Mueller, Germany	16
MROB		R. Mueller, Germany	9
MCLA	27	C. Muir, Canada	3
MGSA	06	G. Muler, Spain	69
MDU		D. Mulinski, Poland	56
MGAB		G. Murawski, Poland	84
MMIC		M. Muro Serrano, Spain	9134
MUY	05	E. Muyllaert, Belgium	4106
MGW		G. Myers, California	10554
NJT	03	J. Nagy, Hungary	1
NDQ	01	D. Naillon, France	100
NTA	13	T. Napoleao, Brazil	4
NCEA		C. Nascimento, Brazil	19
NFSA		F. Naso, Argentina	11
NRNA		R. Naves, Spain	647
NLX		P. Nelson, Australia	9389
NREA	27	R. Nelson, Canada	6
NLZ	03	L. Nemeth, Hungary	26
NBB		B. Neuman, Vermont	4
NJO	02	J. Neumann, Germany	681
NMI		M. Nicholas, Arizona	28
NOT		O. Nickel, Germany	50
NJL	01	J. Nicolas, France	6
NHS	11	H. Nielsen, Denmark	1
NTHB		T. Nordhaus, Germany	10
NCH		C. Norris, Texas	111
NAO		A. Novichonok, Russian Federation	116
NANB		A. Nyholm, Sweden	23
OCN		S. O'Connor, Bermuda	275
ONJ		J. O'Neill, Ireland	138
OAS		A. Odasso, Italy	4
OYE		Y. Ogmen, Turkey	11930

Table 3. AAVSO Observers, 2012–2013, cont.*

Code	Org.	Name	No. Obs.	Code	Org.	Name	No. Obs.
ONOA		N. Ohuo, Japan	8	POX		M. Poxon, United Kingdom	342
OJMA		J. Ojanpera, Finland	118	PYG		G. Poyner, United Kingdom	8503
OAR	17	A. Oksanen, Finland	40315	PMAC		M. Prado, Argentina	9
OARA		A. Olech, Poland	6	PAI		A. Prokopovich, Belarus	19
OEDA	13	E. Oliveira, Brazil	29	PMB		M. Prokosch, Texas	8
ONAA		N. Orehova, Russian Federation	17	PAGA		A. Prosz, Hungary	19
OAD		A. Ormsby, Michigan	31	PUJ	06	F. Pujol-Clapes, Spain	647
OSE		S. Otero, Argentina	2	PHEA		H. Purkaer, Denmark	5
OSJ		J. Otero Saiz, Spain	2	PARA		A. Purroy, Spain	2
OJJ		J. Ott, Colorado	51	PHG		H. Purucker, Germany	112
OCR	05	C. Otten, Belgium	22	QYIA		Y. Qiu, China	24
OEH		E. Ozturk, Turkey	3	QW	02	W. Quester, Germany	15
PLA	13	A. Padilla Filho, Brazil	37	QFI	05	F. Questier, Belgium	7
PSD		S. Padovan, Spain	6273	RKE	02	K. Raetz, Germany	449
PLN	02	L. Pagel, Germany	15	RKM	02	M. Raetz, Germany	15
PLP		L. Palazzi, Italy	850	RBK		B. Ramotowski, New Mexico	17
PPAB		P. Palma, Italy	12	RMW		M. Rapp, Texas	3
PGIA		G. Paone, Italy	48	RRD	14	R. Rea, New Zealand	9
PTFA		T. Papadimitriou, Greece	186	RTN		T. Redding, Florida	1
PPS	03	S. Papp, Hungary	937	REP	24	P. Reinhard, Austria	317
PGC		G. Pappa, Italy	5	RFP	13	P. Reis Fernandes, Brazil	24
PSAA		S. Parker, Massachusetts	10	RNA	38	N. Rezsabek, Hungary	3
PST		S. Parsons, Florida	3	RJG		J. Ribeiro, Portugal	990
PNIA		N. Paschalis, Greece	110	RMP		M. Ricard, Canada	13
PJJ	15	J. Pastor, Spain	28	RIX	29	T. Richards, Australia	13435
PPGA		P. Pastusiak, Poland	2	RHM		M. Richmond, New York	35
PNIB		N. Paul, India	3	RCCA		C. Riou, France	120
PKV		K. Paxson, Ohio	1172	OJR		J. Ripero Osorio, Spain	2868
PEX	14	A. Pearce, Australia	7613	RDEA		D. Ritz, California	851
PEI	11	E. Pedersen, Denmark	918	RIV		M. Rivera, Italy	3
PEG	01	C. Peguet, France	713	RJWA		J. Robertson, Arkansas	4
PSJA	27	S. Pellarin, Canada	2	REE		E. Robinson, United Kingdom	20
PWD		W. Pellerin, Texas	179	RPT		P. Rochford, Alabama	108
PNNA		N. Pereira, unknown	7	RJWB		J. Rock, United Kingdom	7306
PRVA		R. Pereira, Brazil	5	RAEA		A. Rodda, United Kingdom	1138
PCX	15	C. Perello, Spain	2	RFC		F. Rodriguez Bergali, Spain	37
PLFA		L. Perez, Spain	1	RMU	06	M. Rodriguez Marco, Spain	1630
PAAA		J. Perez Trevino, Mexico	3	RZD		D. Rodriguez Perez, Spain	290
PZSA		Z. Perko, Hungary	1	ROE		J. Roe, Missouri	13311
PWL		W. Perry, Arizona	32	RANC		A. Roerig, Germany	62
PGD		G. Persha, Michigan	953	ROG		G. Ross, Michigan	192
PGIB		G. Petricca, Italy	3	RMH	05	M. Rosseel, Belgium	1
PXR	20	R. Pickard, United Kingdom	11303	RGN		G. Rossi, Italy	48
PROC		R. Pieri, France	11	RR		R. Royer, California	35
PREB		R. Pierre, France	27	RVR	07	V. Ruiz, Spain	2
PJEA		J. Pinheiro, Brazil	18	RNL		N. Ruocco, Italy	1
PALD		A. Pintea, Romania	1	RTH		T. Rutherford, Tennessee	33
PIJ	03	J. Piriti, Hungary	831	RZM		M. Rzepka, Poland	672
PMAA		M. Pirtac, Romania	23	SRIC		R. Sabo, Montana	36746
PPL		P. Plante, Ohio	106	SJQ		A. Sajtz, Romania	244
PAW	29	A. Plummer, Australia	2283	SSU		S. Sakuma, Japan	778
AST	12	R. Podesta, Argentina	41	SMRK		M. Salisbury, United Kingdom	1074
PURA		U. Poje, Slovenia	14	SJGA	06	J. Salto, Spain	57
PRX		R. Poklar, Arizona	4074	SQL	26	R. Salvo, Uruguay	6
PEVA		E. Polupanov, Russian Federation	63	SAH		G. Samolyk, Wisconsin	20294
PVEA		V. Popov, Bulgaria	115	DSS	06	A. San Segundo Delgado, Spain	3
PRV		R. Potter, Michigan	147	SPEA		P. Sanchez, Nicaragua	5
PWR		R. Powaski, Ohio	10	SGE	27	G. Sarty, Canada	26
PJOC		J. Powles, Australia	376	SVA		A. Saw, Australia	146

Table 3. AAVSO Observers, 2012–2013, cont.*

Code	Org.	Name	No. Obs.	Code	Org.	Name	No. Obs.
SDAV		D. Scanlan, United Kingdom	143	SVAE		V. Stanimirov, Bulgaria	1
SFS		S. Schiff, Virginia	64	STR		R. Stanton, California	889
SRBR		R. Schippers, Netherlands	626	SDB		D. Starkey, Indiana	10017
SUF		C. Schneider, California	39	SPET		P. Starr, Australia	2042
SANO	04	T. Schoenmaker, Netherlands	7	SJAT		J. Starzomski, Poland	780
SAQ	04	A. Scholten, Netherlands	18	SMIB		M. Stauffer, Idaho	2
SMAM		M. Scholze, Germany	2	SYO		T. Steck, Indiana	497
SGLE		G. Schrader, Australia	154	SABB		A. Steenkamp, United Kingdom	6
SYU	02	M. Schubert, Germany	703	STI		P. Steffey, Florida	767
SBEA	02	B. Schwarz, Germany	10	SWIL		W. Stein, New Mexico	40246
SJEA	01	J. Sciolla, France	464	SET		C. Stephan, Ohio	649
SDSA		D. Segat, Argentina	2	SIF	27	M. Stephens, Canada	21
SDMA		D. Selmo, Brazil	2	SRB		R. Stine, California	97
SSAB		S. Sementsov, Russian Federation	8	SDI	20	D. Storey, United Kingdom	25
SSVA		S. Sequeira, Argentina	8	SFU	29	M. Streamer, Australia	8406
SIV		I. Sergey, Belarus	58	SWIA		W. Strickland, Texas	17
SMRC	01	M. Serreau, France	5	SIAK		I. Strikis, Greece	413
SNOA		N. Setaro, Argentina	11	SNJ		N. Stritof, Slovenia	16
SFJA		F. Sevilla, Spain	40	SRX	14	R. Stubbings, Australia	1507
SSTA	27	S. Shadick, Canada	164	SUK		M. Stuka, California	1
SHS		S. Sharpe, Canada	3379	SAC	02	A. Sturm, Germany	99
SDP		D. Sharples, New York	4	SUS	02	D. Suessmann, Germany	279
SJV		J. Shaver, Morocco	1	SUH		M. Suhovecky, Indiana	5
SFY	20	J. Shears, United Kingdom	2037	SJAR		J. Suomela, Finland	568
SYC		C. Sheppard, Canada	1	SWV		D. Swann, Texas	389
SLH		L. Shotter, Pennsylvania	615	SSW		S. Swierczynski, Poland	155
SYF		Z. Siciarz, Poland	60	SJME		J. Sykes, Washington	11
SNJC		N. Sidanez, Argentina	12	SKIT	03	K. Szabo, Hungary	3
SWTA		W. Sie-Hilland, Canada	1	SZW		R. Szaj, Poland	577
SLUC		L. Siekielewski, Poland	161	SAO	03	A. Szauer, Hungary	29
SGQ		C. Sigismondi, Italy	80	SXB		M. Szczerba, Poland	3
SPAO	18	P. Siliprandi, Italy	492	SLY	03	L. Szegedi, Hungary	96
SGPA		G. Silva, Brazil	18	SKB	03	B. Szoke, United Kingdom	12
SSJB	37	S. Silva, Brazil	1	SJAF		J. Szydlowski, Poland	1
SBN	13	A. Silva Barros, Brazil	56	TPMA		P. Taggart, Canada	1
SMCA	37	M. Silveira, Brazil	3	TUO		U. Tagliaferri, Italy	49
SGEO		G. Silvis, Massachusetts	823	TMAA		M. Talero, Spain	59
SNE		N. Simmons, Wisconsin	6695	TJOB		J. Tapioles, Spain	1
SXN		M. Simonsen, Michigan	4554	TDB	27	D. Taylor, Canada	195
SANG		A. Sing, Philippines	115	TSZ	03	S. Teichner, Hungary	24
STOC		T. Sitek, Czech Republic	16	TBA		A. Tekatch, Canada	6
SGOR		G. Sj^Berg, Massachusetts	2286	TPV		P. Temple, New Mexico	618
SDN		D. Slauson, Iowa	302	TPS	03	I. Tepliczky, Hungary	32
SDAB		D. Smales, United Kingdom	106	TJJA		J. Terceros, Argentina	8
SANB		A. Smirnov, Russian Federation	41	TDN		D. Terpstra, Arizona	3
SMI		A. Smith, United Kingdom	46	TFM		F. Teyssier, France	2
SBAD		B. Smith, United Kingdom	5	TTU		T. Tezel, Turkey	53
SHA		H. Smith, Michigan	173	TSP		S. Thiennot, France	51
SJE		J. Smith, California	19	TILA		I. Thomas, Canada	1
SSTB		S. Smith, California	137	ASV01		M. Thompson, Australia	1
SLEE		L. Smojver, Washington	18	GPJ		P. Thompson, California	1
SSTC		S. Snedden, New Mexico	1	TIA	03	A. Timar, Hungary	482
STAK		T. Soejima, Japan	11	TLEB		L. Tkachook, Ukraine	20390
SKA	16	K. Sokolovsky, Germany	5	TBRA		B. Tobias, Texas	7
SBX		A. Sonka, Romania	31	TRL		R. Togni, Arkansas	29
SJOS		J. Spampinato, Pennsylvania	4	TIV		I. Torreadrado, France	4
SJZ		J. Speil, Poland	1668	TNAA		N. Torres, Argentina	11
SXR	03	M. Sragner, Hungary	5	TFR		F. Travaglino, Italy	44
SBL	05	B. Staels, Belgium	2832	TRF		C. Trefzger, Switzerland	31

Table 3. AAVSO Observers, 2012–2013, cont.*

Code	Org.	Name	No. Obs.
TJC		J. Truax, Michigan	5
TYGA		Y. Tsao, Taiwan, Province of China	80
TSJ		S. Tsuji, Japan	36
TUC	10	C. Turk, South Africa	21
TYS		R. Tyson, New York	367
UAN	03	A. Uhrin, Hungary	26
UJHA		J. Ulowetz, Illinois	29635
UMAA		M. Urbanik, Slovakia	242
VPAA		P. Valleli, Massachusetts	2
BVE	04	E. Van Ballegoij, Netherlands	1319
VBR		H. Van Bemmel, Canada	11
VHJA		H. Van Den Broeck, Belgium	3
HAGA		A. Van Der Hoeven, Netherlands	878
VDL	05	J. Van Der Looy, Belgium	131
VDE	04	E. Van Dijk, Germany	44
VNL	05	F. Van Loo, Belgium	583
VLYA		L. Van Rooijen-Mccullough, Netherlands	114
VSH	05	H. Van Sebroeck, Belgium	1
VUG	04	G. Van Uden, Netherlands	119
VWS	05	J. Van Wassenhove, Belgium	663
VBH	05	H. Vandenbruaene, Belgium	16
VSD	05	D. Vansteelant, Belgium	18
VKN		K. Vardijan, Croatia	2
VCJA	27	C. Vaughan, Canada	6
VVEA	17	V. Vauhkonen, Finland	1
VED	01	P. Vedrenne, France	4120
VCLA		C. Veliz, Vermont	3
VWE	05	W. Verbraecken, Belgium	10
VET	01	M. Verdenet, France	11
VMAA		M. Vieira, Brazil	17
VBI	03	B. Vigh, Hungary	3
VGK		G. Vithoulkas, Greece	1302
VPZ	03	P. Vizi, Hungary	42
VFK	02	F. Vohla, Germany	4793
VALC		A. Voishchev, Russian Federation	4
VOL		W. Vollmann, Austria	813
VVC		V. Voropaev, Russian Federation	4
VVE		V. Vrhovac, Croatia	3
WEO		E. Waagen, Massachusetts	1
WLY		L. Wade, Mississippi	122
WXR	19	R. Wahlstrom, Sweden	1896
WNBA		N. Wakefield, United Kingdom	28
WGR		G. Walker, New Hampshire	9473
WEQ		E. Waller, Virginia	8
WBY		B. Walter, Texas	111
WJX		J. Wan, Australia	2
WYUE		Y. Wang, Oregon	170
WYUD		Y. Wang, China	21
WGE		G. Ward, West Virginia	3
WJOB	19	J. Warell, Sweden	18
WAU		A. Wargin, Poland	71
WAB		B. Warner, Colorado	700
WCB		C. Webster, Pennsylvania	5
WPT		P. Wedepohl, South Africa	55
WEI		D. Weier, Wisconsin	2
WEL		D. Welch, Canada	1
JJAA		J. Welch, Massachusetts	10
WKL	02	K. Wenzel, Germany	806
WWAA		W. Westlake, Arizona	3
WDT		D. Wetherington, Florida	4
WDO		D. Whelan, Rhode Island	23
WJAA		J. Whinfrey, United Kingdom	165
WFOA		F. Wierda, Finland	1
WTHB	19	T. Wikander, Sweden	2529
WLEA		L. Wikholm, Finland	5
WTHA		T. Will, Germany	2
WI		D. Williams, Indiana	13
WPX	29	P. Williams, Australia	4101
WLP	05	P. Wils, Belgium	21
WAJA	20	A. Wilson, United Kingdom	55
WWJ		B. Wilson, United Kingdom	1009
WBH		R. Wilson, Arizona	67
WSN		T. Wilson, West Virginia	1151
WERA		E. Wines, New York	1
WAS	02	A. Winkler, Germany	16
WKM		M. Wiskirken, Washington	1
WBS		R. Wobus, Maryland	9
WGI	02	G. Wollenhaupt, Germany	1
WBT		R. Wolpert, California	14
WGO		G. Wood, North Carolina	8
WWD		W. Wood, Arizona	1
WUB	04	E. Wubbena, Netherlands	197
WCG		C. Wyatt, Australia	8
XYUA		Y. Xing, China	2
YBRA		B. Yang, China	21
YTXA		T. Yang, China	1
YPFA		P. York, Australia	15
YBA		B. Young, Oklahoma	8
YDV		D. Young, Massachusetts	125
YJOA		J. Young, Massachusetts	73
YON		R. Young, Pennsylvania	13
YYIA		Y. Yu, China	2
ZMAA		M. Zajchowski, Poland	55
ZAD		D. Zak, Pennsylvania	3
ZALB	37	A. Zanardo, Brazil	15
ZMAC		M. Zbrudzewski, California	12
ZPA		P. Zeller, Indiana	5
ZCHA		C. Zhang, China	12
ZQIA		Q. Zhang, California	16
ZGEA		G. Zhao, China	357
ZIN		S. Zinn, Pennsylvania	37
ZDAC		D. Zubovic, Croatia	6
ZGA	03	G. Zvara, Hungary	51

** Totals reflect observations made during fiscal 2012–2013 and do not include historical data (data preceding fiscal 2012–2013) submitted during fiscal 2012–2013.*

These codes, which appear in the Table (AAVSO Observers 2012–2013), indicate observers are also affiliated with the groups below:

01 Association Française des Observateurs d'Étoiles Variables (AFOEV)
02 Bundesdeutsche Arbeitsgemeinschaft für Veränderliche Sterne e.V. (BAV) (Germany)
03 Magyar Csillagàszati Egyesület, Valtózocsillag Szakcsoport (Hungary)
04 Koninklijke Nederlandse Vereniging Voor Weer-en Sterrenkunde, Werkgroep Veranderlijke Sterren (Netherlands)
05 Vereniging Voor Sterrenkunde, Werkgroep Veranderlijke Sterren (Belgium)
06 Madrid Astronomical Association M1 (Spain)
07 Asociacion de Variabilistas de Espagne (Spain)
08 Norwegian Astronomical Society, Variable Star Section
09 Ukraine Astronomical Group, Variable Star Section
10 Astronomical Society of Southern Africa, Variable Star Section
11 Astronomisk Selskab (Scandinavia)
12 Liga Iberoamericana de Astronomia (South America)
13 Rede de Astronomia Observacional (Brazil)
14 Royal Astronomical Society of New Zealand, Variable Star Section
15 Agrupacion Astronomica de Sabadell (Spain)
16 Association of Variable Star Observers "Pleione" (Russia)
17 URSA Astronomical Association, Variable Star Section (Finland)
18 Unione Astrofili Italiani (Italy)
19 Svensk Amator Astronomisk Förening, Variabelsektionen (Sweden)
20 British Astronomical Association, Variable Star Section
21 Israeli Astronomical Association, Variable Star Section
24 Astronomischer Jugendclub (Austria)
26 Red de Observadores (Montevideo, Uruguay)
27 Royal Astronomical Society of Canada
29 Variable Stars South (New Zealand)
31 Center for Backyard Astronomy
36 Nucleo de Estudo e Observacao Astronomica—Jose Bazilicio de Souza (Florianopolis, Brazil)
37 Clube De Astronomia De Sao Paolo (Brazil)
38 AAK—Albireo Amateur Astronomy Club Public Association (Hungary)

Table 4. Observation statistics for fiscal year 2012–2013.*

Observations (increments of 1000)	*No. Observations per increment*	*% of All Observations*	*No. Observers per increment*
0 – 999	95433	6	803
1000 – 1999	51853	3	38
2000 – 2999	42926	3	18
3000 – 3999	36826	2	10
4000 – 4999	47961	3	11
5000 – 5999	32771	2	6
6000 – 6999	25746	2	4
7000 – 7999	21973	1	3
8000 – 8999	33848	2	4
9000 – 9999	47242	3	5
10000+	1102313	72	27

** Totals reflect observations made during fiscal 2012–2013 and do not include historical data (data preceding fiscal 2012–2013) submitted during fiscal 2012–2013.*

The International Variable Star Index (VSX)

Sebastián Otero and Patrick Wils

As years go by, more and more new variable stars are being discovered, not only by the growing number of sky surveys but also by amateurs equipped with CCD or DSLR cameras. It is a challenge to keep our database up to date with such a flood of information but we struggle to reach that goal without compromising the quality of the data included in VSX.

VSX was conceived and created by amateur astronomer Christopher Watson in response to the specific desires of the members of the Chart Team and the Comparison Star Database Working Group of the American Association of Variable Star Observers (AAVSO), and the broader perceived need for a globally-accessible central "clearing-house" for all up-to-the-minute information on variable stars, both established and suspected. The VSX web site was designed to be the on-line medium by which variable star data are made available to the general public, and through which the data are maintained, revised, and commented upon. This database literally comes alive with the input from the world of registered contributors.

In order to keep VSX up to date and populated with the latest corrected findings, registered and approved individuals constantly review and revise the metadata, always citing sources for any new details, and fully documenting the rationales behind any additions or changes. By maintaining a strict version control on all records, the history of the gathered knowledge on each variable star can be traced, validated, and followed up on by those who rely on this information to be accurate and true.

This report covers activity from January 1, 2013, to December 31, 2013.

Number of Submissions and Revisions

After 2012's record of 2,273 new stars submitted, we had 1,880 this year, but the number of submitters grew from 71 to 76 (a total of 222 users have submitted at least one new star or revision since VSX's creation).

The mean number of submissions per month was 157 against 206 from last year. These numbers are related to a new policy of accepting up to 5 stars a day from the same submitter/team. This policy had to be implemented because there are very prolific teams submitting data-mining results to VSX and it was taking too much time to review all those individual submissions.

The number of average monthly revisions made by users has almost remained the same, only changing from 21 last year to 22 in 2013. Sebastian's personal count per month shrank from 205 in 2012 to 133 in 2013, with 1594 revisions made over the whole year.

A great deal of his time is devoted to moderating submissions and revisions and to guiding observers through the submission process. Questions about catalogues and data analysis and especially issues concerning variable star classification are continuously being discussed via e-mail as part of the moderation process.

Patrick's work importing new catalogues and discoveries/lists coming from published papers resulted in 69,388 new stars added (compared with 10,158 last year) and 10,347 revisions to known variable stars (5,449 in 2012).

To have a good idea of what the number 69,388 means, the number of stars that made up the VSX original population (back in 2005)—and consisted basically of the entire GCVS/NSV catalogues and the variable star lists from ASAS, NSVS and Downes—was 133,659. In this year alone we added 71,268 stars (Patrick + individual submitters), 53.3% of the number of all variable stars we had in the database when we started! Also, we had more stars added last year than the previous 4 years combined!

New variables being announced through survey pages and alert lists continue to be imported almost in real time.

You can check what's new on VSX by trying one of the special searches (like "Changes since last login") in the VSX search page.

Duplicate Records

VSX ended 2013 with 284,635 records. We don't call them stars because there are still many duplicate records among them. In the framework of the primary record creation work (which means that all the information available is used to update a star's detail sheet), Sebastian hid 823 duplicate entries this year, plus 10 unclassified duplicate objects. 4,826 duplicate records have been hidden since the primary record creation work started back in 2011 (4,936 counting the unclassified ones). Patrick hid another 100 records this year after cross-identifications were made while importing new lists.

A total of 21,823 objects have been hidden since VSX was launched in 2005. Hidden objects are kept in the database (but not displayed to the public) because they include information, such as a name or object type, that is needed by background users, for example, AAVSO Headquarters staff.

Incorrect Identifications Corrected

More incorrect identifications are being found in the process of cleaning up the VSX database.

23 incorrect cross-identifications in VSX have been corrected in 2013 (usually incorrect identifications made by surveys).

41 GCVS/NSV identifications have also been corrected and reported to the GCVS team (there were 51 in 2012). Several of them were made by Jerome Caron and François Kugel on behalf of the Dauban Survey and double-checked by the VSX team.

Cross-Identifications (Between Objects) Added

402 new cross-identifications between VSX records were established in 2013 and the 402 resulting duplicates were deleted (1934 in total since 2011).

Work on VSX/VSD/AID Inconsistencies and Problems with Submitted Data

More work was devoted this year to clean up the AID from errors caused by duplicate entries in VSX.

Several years ago, unclassified objects (not visible to the public) were added to VSX for objects with data in the AAVSO International Database (AID) that were not classified as variables. They had old names or non-standard abbreviations in the AAVSO Validation File. Those stars were independently added to VSX when they were published in the GCVS or in some other imported list and their corresponding unclassified objects then became duplicates. In several cases, we ended up having observations in two different records for the same object. If observers haven't realized that a new name was given, they might still be reporting the star with its old-fashioned name, so this is a good chance to make a public warning: if you find your star's name to be odd (not a GCVS name) or having been used since the pre-VSX era (before 2005), checking the object's VSX entry to see what its current primary name is won't hurt. We still need to merge lots of data from different pairs of duplicates, but if observations are not reported to the wrong records anymore that will be a big help in not perpetuating the problem. (Once all the observations are merged under the star's primary record, we delete the incorrect duplicate AAVSO Unique ID (AUID) number so no one can submit data under the wrong name anymore). We corrected 97 such records in 2013.

Checking data submitted to the AID due to the duplicate problems allowed us to find

several other issues with the submitted data caused by a variety of reasons, from a bug in the photometry software to crowding problems, both of which cause wrong identifications, duplicate submissions under different names but the same AUID, or blended photometry results. The observers were and are being contacted to solve these problems. We urge observers to double-check their images to properly identify the stars being reported.

Sometimes different AUIDs for different observations of the same object were found in VSX and in the AAVSO Variable Star Database (VSD) (containing data on all the stars that appear on every AAVSO VSP chart or photometry table) because the star was first used as a comparison star and then discovered to be variable. Several of these cases were checked. The duplicate AUIDs were deleted. The stars that turned out to be irregular variables or variables with amplitudes greater than 0.05 mag. were excluded from comparison stars sequences. We had 17 of them this year. Some others only needed a remark warning CCD observers not to use them but were okay for visual use so they were kept. The Sequence Team is informed of these changes so they can replace the deleted comparison stars if needed.

Thus, VSX is a core application that interacts with almost everything else in the AAVSO universe, from other software tools to the observers submitting data via WebObs. We try to improve it every day, solving inconsistencies and updating the database with the most recent data available.

We thank all the people who submit new discoveries and revisions to VSX and all the AAVSO staff that help in the cleaning-up process.

Section Reports

Cataclysmic Variable (CV)

Section Leaders: ***Mike Simonsen,*** *2615 S. Summers Road, Imlay City, MI 48444*
Gary Poyner*, 67 Ellerton Road, Kingstanding, Birmingham, B44 0QE, England*

CV Section Website

The CV Section website is hosted by Google at:

https://sites.google.com/site/aavsocvsection/Home

This year featured two substantial observing campaigns, Cataclysmic Variables to be Monitored for HST Observations and the Z CamPaign. The Hubble CV campaign was organized by Drs. Boris Gaensicke (Warwick University), Joseph Patterson (Columbia University, Center for Backyard Astrophysics), and Arne Henden (AAVSO) on behalf of a consortium of 16 astronomers. They requested assistance in the monitoring of 41 targets from September 2012 to September 2013. The Z CamPaign completed its fourth year in September, resulting in a paper by Simonsen and 14 co-authors, summarizing the results to date. The paper has been accepted for publication in *The Journal of the AAVSO* (*JAAVSO*) in early 2014.

The main features on the home page are a left-hand news column and navigation box, a center column feature story and recent pre-prints for arXiv on CVs, and a right-hand column with Activity at a Glance (outbursts from the past 72 hours), CV outbursts from CRTS, and boxes for the Z CamPaign, Hamburg Survey CVs, and the Long-Term Polar Monitoring Program.

The home page is maintained and updated daily, often several times per day by section co-leaders Simonsen and Poyner. All the remaining content, including the blog, feature articles, and interviews, is written, edited, and maintained by Simonsen.

There is now a forum devoted to Cataclysmic Variables on the AAVSO website. We discuss cataclysmic variables, potential targets, observing techniques, recent activity, campaigns, resources for information, and more. This list is very much like the stars in question—sudden outbursts of activity followed by periods of quiescence.

Simonsen and Poyner also moderate the CVnet Yahoo mail lists. The three CVnet lists are:

CVnet Discussion

The discussion list has 267 subscribers. The past year's activity is best described as an announcement list. Actual discussion seldom takes place. Notes from *AAVSO Alert Notices*, *IAU Circulars,* and *Astronomers Telegrams* get forwarded here also.

CVnet Outburst

Outburst list has 248 subscribers. This list has daily activity and is used by observers to announce outburst detections and unusual behavior of CVs, as well as Z Cam standstills and time series results.

CVnet Circular

The *Circular* has 178 subscribers and is edited and maintained by Chris Watson and Mike Simonsen. Daily average magnitudes of all the CVs in the AAVSO International Database are calculated and tabulated for a 30-day period and distributed via email each Monday.

Charts and Sequences

Section Leader: ***Mike Simonsen,*** *2615 S. Summers Road, Imlay City, MI 48444*

The Team

While we refer to the International Variable Star Plotter (VSP) as an Automated Chart Plotter, there is still a lot of work that goes on behind the scenes to make these "automated" charts available. There are real people who work tirelessly day after day, reducing data from the APASS survey and other AAVSOnet telescopes, loading it into the database, selecting the stars for sequences, documenting the work that is done, updating the lists of new and revised sequences, and checking off the requests for new sequences as they are completed.

The charts and sequences team is made up of volunteers and staff who work countless hours each month revising old sequences and creating new sequences. The current active members of the charts and sequences team are Sara Beck, Thom Bretl, Tim Crawford, Robert Fidrich, Keith Graham, Jim Jones, Mati Morel, Sebastian Otero, and Mike Simonsen.

Our most active team members account for about 90% of the work, notably Tom Bretl, Tim Crawford, and Jim Jones. Sebastian Otero provides invaluable insight into bright star catalogs and photometry as well as southern hemisphere sequences. He also adds new stars to VSX in a timely fashion and advises us on various other topics.

The Tools

The primary tool, SeqPlot, displays stars with reliable photometry in three colors, green, red, and blue. This makes it easy for team members to select non-red and non-blue stars based on B-V color. Selecting a star for a sequence is done by clicking on that star, which in turn sends it to a text file, formatted for uploading into the variable star/comparison star database, VSD.

Files and notes on sequences are shared through the sequence team mail list. Simonsen collects and archives the files, evaluates the submissions, uploads data to VSD, checks the resulting charts, and notifies the observers of updates every other month via the AAVSO website.

The other important tool in the sequence chain is the VSD Admin tool, which allows team members to access, edit, add, and delete information from the comp star database.

Changes are all tracked online in a Google spreadsheet accessible to the public at:

https://spreadsheets.google.com/ccc?key=0Ar0ujdSb5ufQdEhkTE5jREhWRm95dDRialM0R1ZGREE&hl=en&pli=1#gid=0

We have been actively addressing reported errors and issues, and requests for sequence revision and additions via CHET, the chart error tracking tool, which allows observers to report and track the progress of chart issues. CHET can be accessed on the website at:

http://www.aavso.org/chet

Of the 601 reports currently residing in CHET only 105 remain unresolved as of October 1, 2013.

Photometry

Photometry available in SeqPlot includes the Tycho database, Bright Star Monitor data, Henden 1M USNO calibrations, new releases of APASS data as they become available, and several sources from AAVSOnet, including SRO, and the Wright telescopes.

All the new photometry used in 2013 came from APASS, which now covers the entire sky down to approximately 16th magnitude in V.

The Website

The sequence team has its own website, created and maintained by Simonsen, where team members, especially new team members, can find instructions on how to use SeqPlot, guidelines for sequence creation and revisions, photometric resources outside SeqPlot, a tutorial on how to use ASAS data, and a list of current projects and priorities. The team site can be viewed online at:

https://sites.google.com/site/aavsosequenceteam/Home

Results

The results speak for themselves in the improved quality of the sequences available to observers and the speed and efficiency with which revisions and new sequences can be implemented with the system in place now. Below is the total number of revised and new sequences produced by the team since 2009.

Year	*Number*
2013	787
2012	860
2011	655
2010	437
2009	268

2012 saw the launch of the new AAVSO Binocular Program, consisting of 153 stars in the northern and southern hemispheres. They are mostly semiregulars and Miras, with a few other types sprinkled in. Most of the stars range between 3.0 and 9.5V and can be observed best using simple hand-held binoculars.

The team has selected special sequences for these stars. Additionally, special "Binocular Charts" can now be plotted that will display only those comparison stars selected for the sequence for that star.

The team is currently developing selected sequences for DSLR photometry to be used in conjunction with the DSLR Photometry Manual to be published in 2014.

Eclipsing Binary

Section Leaders: ***Gerard Samolyk,*** *P.O. Box 20677, Greenfield, WI 53220*
Gary Billings*, P.O. Box 263, Rockyford, Alberta T0J 2R0, Canada*

Two papers containing 692 times of minima for 248 stars observed by 18 observers were submitted to *JAAVSO*. These papers included the remainder of the previously unpublished CCD data that was received by the EB committee before the EB section was created. Observers who would like to contribute data to these papers in the future should upload their observations to the AID and send a copy to gsamolyk@wi.rr.com.

Times of minima published by the AAVSO continue to be added to the Lichtenknecker Database maintained by the BAV. This is the most comprehensive database of EB times of minima. An English language interface to this database can be found at: http://www.bav-astro.de/LkDB/index.php?lang=en.

Using observations received in 2013, the light elements of over 60 stars on the AAVSO legacy program have been updated for the 2014 Ephemeris. Most of these corrections are small.

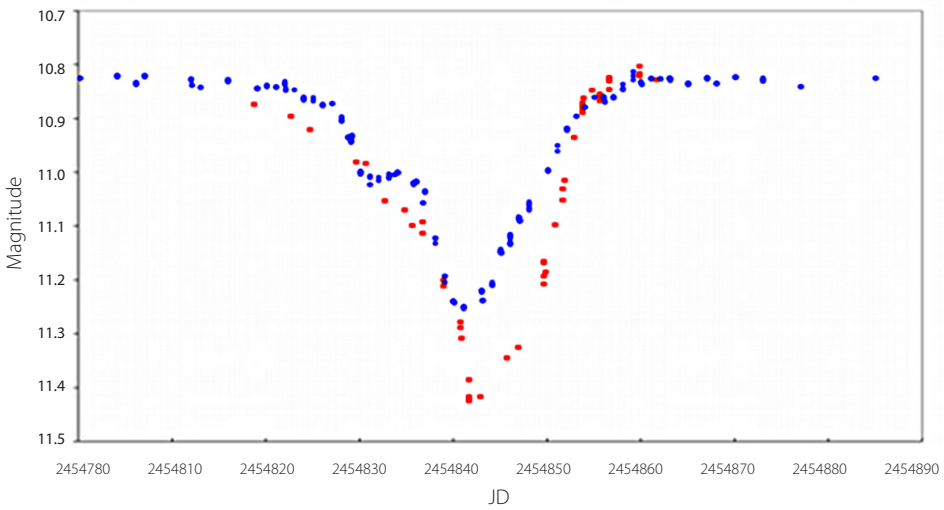
Last year, a list of 17 neglected legacy stars was included in this report. Since then, at least one time of minimum was received for all but two of these stars. Please use the list below when planning your observations.

Legacy stars that have not been observed since 2009: AC Tau and AG Vir.

Legacy stars that have not been observed since 2010: ZZ Boo, UU Leo, BO Mon, FL Ori, AQ Peg, and RU UMi.

Legacy stars that have not been observed since 2011: AR Aur, CT Her, RY Lyn, UZ Lyr, TX UMa, and XZ UMa.

In the summer of 2014 the next eclipse of EE Cephei will occur. This is a disk-type eclipser that is a shorter-period cousin of Epsilon Aur. This star has an orbital period of 5.6 years. The predicted date for the next mid-eclipse is 22 Aug, 2014. The plot shown on the next page shows the significant difference in the shape of the previous two eclipses in V band. One possible explanation for the difference is a change in the orientation of the disk as it passes in front of the primary star.



Observations of the 2009 eclipse of EE Cep (blue dots). The 2003 eclipse (red dots) is shown for comparison.

It is recommended that observers image EE Cep, using all available filters, for at least four weeks centered on the predicted mid-eclipse. Comparison magnitudes are available on the variable star plotter (VSP) page of the AAVSO website (aavso.org). For best results, take several images at one time and average the results, repeating the process for each filter.

Long Period Variable (LPV)

The Long Period Variable section is currently inactive. Observers who are interested in leadership or other support for the LPV section should contact AAVSO Headquarters (aavso@aavso.org).

The primary goals of the section are: to facilitate the long-term observation, both visually and electronically, of the Legacy LPVs in the program; and to promote other scientifically significant LPV targets for observers to follow. We are particularly interested in encouraging and guiding visual observers to include LPVs in their target selection and in building their own observing programs. As with all Sections, the LPV section requires both healthy leadership and interest from the larger observer community. The AAVSO encourages both LPV observers and users of AAVSO LPV data in their research to get involved with the AAVSO LPV section.

Nova Search

The Nova Search Section is being redesigned. Information will be available on the AAVSO website as work in this section develops.

Photoelectric Photometry

Section Leader: ***James H. Fox,*** *P.O. Box 135, Mayhill, NM 88339*

The AAVSO Photoelectric Photometry (PEP) program has continued to attract new members during the past year as detailed in the 2013 *AAVSO Newsletters*. The cadre of active PEP observers have contributed 1,769 observations through a variety of standard filters during the period. We continue to provide accurate measurements of bright stars.

Observers also have contributed measurements to specific campaigns, including b Per for Dr. Bob Zavala, USNO Flagstaff; CH Cyg for Dr. Margarita Karovska, Harvard-Smithsonian Center for Astrophysics; P Cyg for Ernst Pollmann, Leverkusen, Germany. A special treat this year was the appearance of a bright nova, N Del 2013 (now V339 Del), that was bright enough to follow for almost a month with our PEP equipment.

Heartfelt thanks to each observer for their contribution! Sincere thanks also go to Dr. Matthew Templeton for his assistance in coordinating the PEP work at AAVSO Headquarters.

AAVSO International Database PEP data contributors 2012–2013

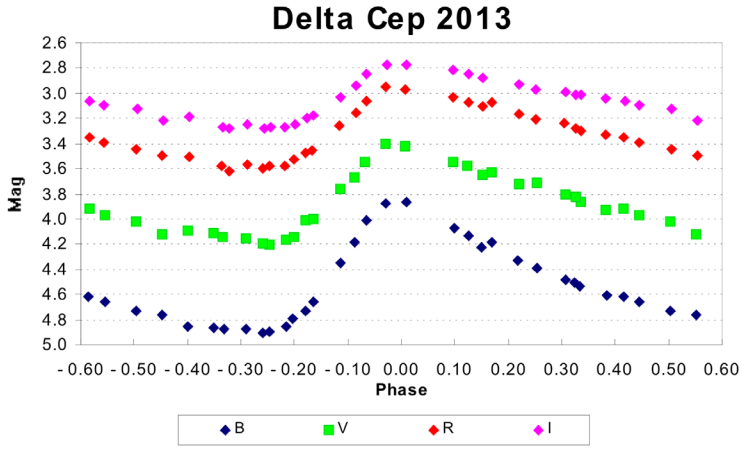
Name	*Location*	*Observer Initials*	*Total*
Tom Calderwood	Oregon	CTOA	44
Charles Calia	Connecticut	CCB	211
Giorgio Di Scala	Australia	DSI	36
James Fox	New Mexico	FXJ	243
James Kay	Vermont	KJMB	14
John Martin	Illinois	UIS01	44
Frank Melillo	New York	MFR	20
Hans Nielsen	Denmark	NHS	1
Adrian Ormsby	Michigan	OAD	31
Gerald Persha	Michigan	PGD	953
Patrick Rochford	Alabama	RPT	108
Thomas Rutherford	Tennessee	RTH	33
Richard Tyson	New York	TYS	1
Erwin Van Ballegoij	Netherlands	BVE	19
Henri Van Bemmel	Canada	VBR	11
TOTAL			1,769

Short Period Pulsator

Section Leader: ***Gerard Samolyk,*** *P.O. Box 20677, Greenfield, WI 53220*
Section Webmaster: ***Shawn Dvorak,*** *1643 Nightfall Drive, Clermont, FL 34711*

The Short Period Pulsator Section is responsible for stars in the instability strip of the HR diagram. Over the years there has been an emphasis on RR Lyr and δ Sct stars but Cepheids have not received much attention. Below is a light curve of δ Cep obtained in 2013. Multiple images of the field were taken through each filter on random nights. The photometry for each night was averaged and plotted to phase. A list of interesting Cephied stars can be found on the section website at:

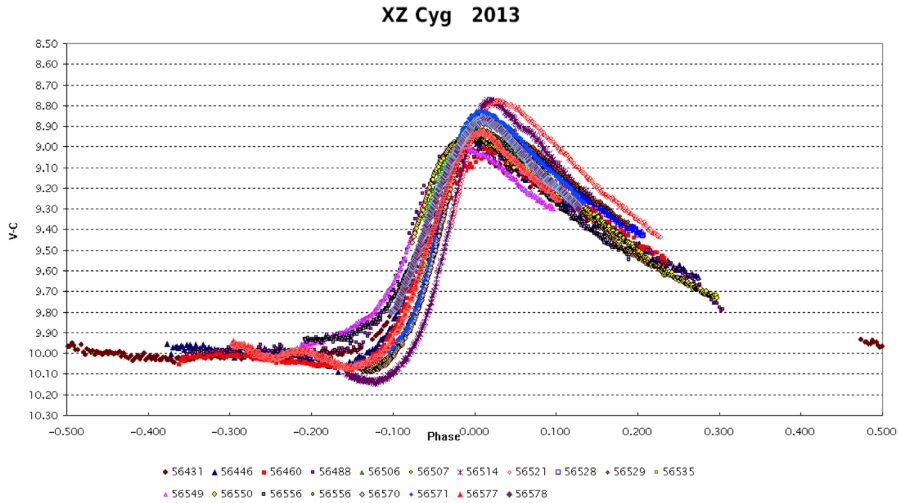
https://sites.google.com/site/aavsosppsection/

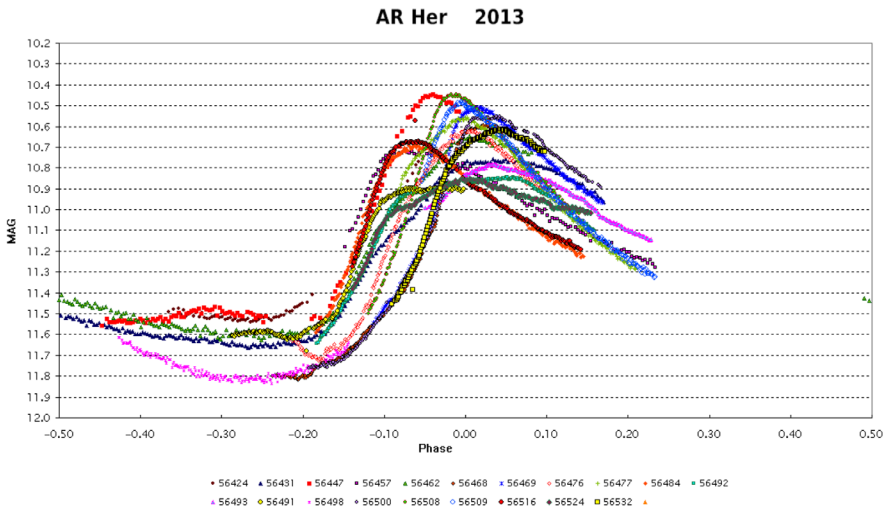


A paper containing 192 times of maxima of 61 stars was published in *JAAVSO*. This paper contained the reduction of data sent to the section chair by six observers in 2012. Times of maximum published by the AAVSO are included in the GEOS database that can be found at: http://dbrr.ast.obs-mip.fr/. Any observer who would like to contribute data to these papers should upload their observations to the AID and send a copy to gsamolyk@wi.rr.com.

In 2013, observations were received on all but three of the stars on the AAVSO RR Lyr legacy program. The three stars are: DG Hya, DH Hya, and WW Leo. Using these observations, the light elements of 13 stars on the AAVSO legacy program have been updated for the 2014 ephemeris. This ephemeris is posted on the AAVSO SPP Section website.

We had good coverage of several legacy stars that exhibit a Blazhko effect. Below are the light curves for XZ Cyg and AR Her. While most observers concentrate their observations around the maximum, it should be noted that there are significant differences in the light curve from cycle to cycle at all phases, particularly at minimum. Observations at all phases are important and necessary for the analysis of the light curve.

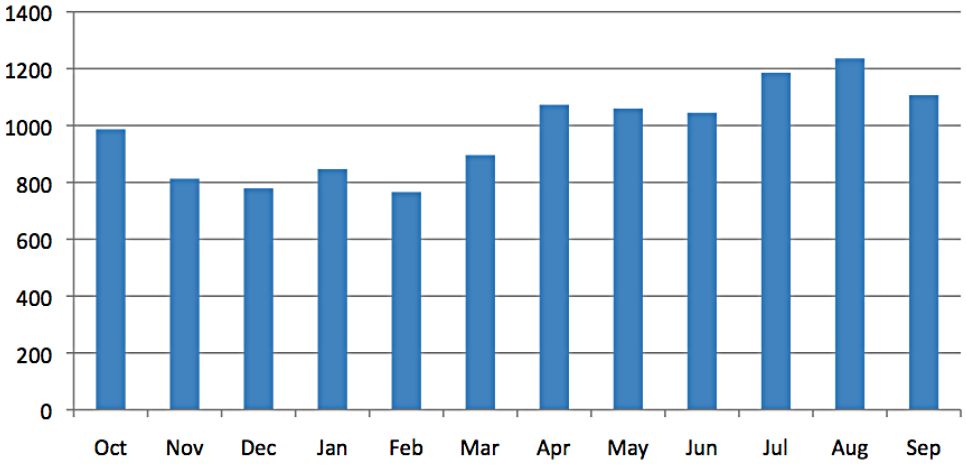




Solar

Section Leader and SID Group Leader: ***Rodney Howe,*** *3343 Rivaridge Drive, Fort Collins, CO 80526*
Sunspot Group Leader: ***Kim Hay,*** *76 Colebrook Road, Yarker, ON K0K 3N0, Canada*

There were a total of 11,795 observations of optical sunspot and group counts for October 2012 through September 2013.



Sunspot observations counts, October 2012–September 2013.

AAVSO Solar Awards (sunspots) are awarded for submitting 1,500 monthly reports and increments of 1,500. This year 17 obsrvers are receiving Sunspot awards, as shown below.

Solar Ionospheric Disturbance (SID) Report

For the last twelve months overall SID Activity has gone from eight months of northern hemisphere solar activity to three months of southern hemisphere activity. The year started off with a moderate activity of SIDs in October 2012 through January 2013, but then in February through September 2013 we began seeing a few more M-class flares and one X-class flare in May. Our observer ranks have increased by six and we still have on average fourteen to sixteen vigilant in their watch for the next solar flare events coming up in solar cycle 24.

There were a total of nineteen observers submitting reports this last year and a total of 287 reports were sent in. I want to thank all the observers for their efforts in monitoring the sun as it begins a new solar cycle.

SID Observer awards are given to observers after having submitted more than 40 reports to the group this year inclusive and increments of 40. Four observers are eligible for an award this year.

Solar Section Observer Awards for 2012–2013

Sunspots

Category	*Name*	*Observer Initials*	*Total*	*Year Total*
1000 Observations				
	Timothy Hrutkay	HRUT	1251	68
	Enrico Mariani	MARE	1006	88
1500 Observations				
	Clyde Simpson	SIMC	1542	97
2000 Observations				
	Gerald Dyck	DGP	2114	233
2500 Observations				
	Michael Boschat	BMF	2568	197
	Monty Leventhal	LEVM	2515	218
3000 Observations				
	Franky Dubois	DUBF	3222	246
	James Knight and Shirley Knight	KNJS	3201	249
	Etsuiku Mochizuki	MCE	3110	265
	Gerd-Lutz Schott	SCGL	3162	212
	Piotr Urbanski	URBP	3033	190
	A. Gonzalo Vargas	VARG	3134	215
3500 Observations				
	Robert Brown	BROB	3725	287
	Tom Fleming	FLET	3557	249
	Miyoshi Suzuki	SUZM	3652	283
4500 Observations				
	German Morales Chavez	CHAG	4663	334

SID

Name	*Observer Code*
Roberto Battaiola	A96
Francois Steyn	A102
Frank Adamson	A122
Susan Oatney	A125

Young Stellar Objects

Section Leader: ***Michael Poxon,*** *9 Rosebery Road, Great Plumstead, Norfolk NR13 SEA, England*

The section began last year with a lot of energetic activity and has now settled down somewhat into Main-Sequence respectability, even though the stars we study thankfully haven't! Cooperation with professional astronomers continues, and a new page has been added to the website to reflect this aspect of the section, whose URL is:

http://www.starman.co.uk/ysosection/

The increased coverage of not just the "old" AAVSO program stars such as T Tau and RW Aur but also less well-known objects such as V1331 Cyg and V561 Cyg is a good step forward. I may want to re-introduce the search for UXORs among stars catalogued as Algol-type Eclipsing Binaries following the recent discovery that FX Vel is one such object. A good target for our Southern observers, and a brightie to boot. To this end I may add another page to the website listing all the candidate EA stars within 5° of the galactic equator.

Since a cursory glance through such resources as the *IBVS* issues often turns up quotes about how little certain stars have been studied at optical wavelengths, the potential for our members is large, and increasing. A good year of consolidation.

Treasurer's Report
October 1, 2012–September 30, 2013

Tim Hager, *Treasurer, AAVSO, 49 Bay State Road, Cambridge, MA 02138*

The financial figures provided herein are prepared in a way similar to past years to provide a statement of income and expenses. The only change is that the withdrawals and cash distributions from the endowment funds have been removed from the income category and are shown as a separate line. AAVSO also has its finances audited yearly by an independent external auditor and that report is available on request.

Income for the year totaled $683,331. The primary sources of funding include grants (75%), bequests and donations (12%), and membership dues (10%).

As was the case last year, a significant portion of the organization's income was from various grants including $203,334 for NASA's Chandra mission education and public outreach, $58,452 from the National Science Foundation (NSF) for Citizen Sky and $226,740 from NSF for the Two Eyes—3D education initiative. These three grants will continue to be a major source of income for the organization in fiscal year 2014 but at lower levels and 2014 will be the last year for Citizen Sky and Two Eyes—3D. Given the tighter fiscal climate in Washington, we expect that grants will be more difficult to obtain for the foreseeable future.

We received numerous donations from many benefactors and we are very grateful to all who support the AAVSO through their contributions and planned giving. These sources of income will become more critical to the organization as grant funds become increasingly difficult to obtain.

Expenses for the year totaled $1,401,369 with salaries and benefits being the major contributor (81%). Investment advisory expense was high due to a one time buy-in fee of $32,416 from the splitting of the endowment investments (see below).

Not included in the year's expenses were purchases of capital assets which remain of value and useful to the association over multiple years. These capital items consisted of telescopes, camera equipment, and computer equipment mostly for the Second Generation Synopic Survey or AAVSOnet and totaled $22,437. Only $2,147 was not specifically covered by a grant or contribution.

Finally, the endowment funds again saw an increase in value this fiscal year ending the year at $13,057,419 after withdrawals, distributions, and expenses compared to an ending balance of $12,536,842 last year. In February 2013 the council voted to split the endowment between two fund managers in an effort to increase the returns on our investments. In mid-March, half the endowment balance was moved from Modera Wealth Management to The Investment Fund for Foundations (TIFF). The council is continuing to explore all options to maximize the investment earnings in our endowment.

2013 Income

Dues income	$66,135
Sales	4,669
Meetings, CCD School, Choice	11,399
Grants	514,556
Bequests and Donations	85,181
Bank interest and royalties	1,391
Total Income	$683,331

2013 Expenses

Staff salary costs	$748,512
Contract/temp salaries	198,049
Payroll tax, benefits, and other costs	185,451
Building maintenance	3,621
Utilities, cleaning, insurance	19,276
General office expenses	33,463
Postage	8,241
Legal and accounting	10,090
Publications	2,626
Technical operations (including AAVSOnet)	19,756
Internet	12,438
Meetings	23,376
Travel	63,218
Miscellaneous	17,968
Investment Advisory Expense	55,284
Total Expenses	$1,401,369

Shortfall	($718,038)
Distributions from Endowment*	115,890
Withdrawals from Endowment	677,388
Net	$ 75,240

* A distribution from TIFF in the amount of $90,802 counted in the amount above was made on September 30, 2013, but was not received until early October 2013.

3. Officers, Staff, and Volunteers

AAVSO Officers, Council Members, and Section Leaders for Fiscal Year 2013–2014

You may contact these persons through AAVSO Headquarters.

Officers

Director	Arne A. Henden	(term of office: 2005–2016)
President	Jennifer Sokoloski	(2013–2014)
1st Vice President	Jim Bedient	(2013–2014)
2nd Vice President	Kristine M. Larsen	(2013–2014)
Secretary	Gary Walker	(2009–2014)
Treasurer	Tim Hager	(2012–2014)
Clerk	Arne A. Henden	(2009–2014)

Council Members

Edward F. Guinan	(2008–2014)
Roger S. Kolman	(2011–2015)
Chryssa Kouveliotou	(2011–2015)
John Martin	(2011–2014)
Kevin Paxson	(2012–2014)
Donn R. Starkey	(2010–2014)
David G. Turner	(2009–2015)
Doug Welch	(2013–2015)

Section Leaders

Cataclysmic Variable	Mike Simonsen, Gary Poyner
Charts and Sequences	Mike Simonsen
Eclipsing Binary	Gerard Samolyk, Gary W. Billings
Photoelectric Photometry	James H. Fox
Short Period Pulsator	Shawn Dvorak, Gerard Samolyk
Solar	
Section Chair	Rodney H. Howe
Sunspot Group Leader	Kim Hay
Solar Flare/SID Observing Group	Rodney H. Howe
Solar Bulletin Editor	Rodney H. Howe
Young Stellar Objects	Michael Poxon
Journal of the AAVSO Editor	John R. Percy

AAVSO Headquarters Staff

Sara Beck	Technical Assistant, Special Projects
Gloria Ortiz Cruz	Data Entry Technician
Jordan Gibson	Administrative Assistant (from February 2014)
Arne Henden, Ph.D.	Director
Richard Kinne	Astronomical Technologist, Information Technology
Will McMain	Web Developer
Sebastián Otero	External Consultant, VSX Team, Spanish Translations
Lauren Rosenbaum	Administrative Assistant (through January 2014)
Michael Saladyga, Ph.D.	Technical Assistant, *JAAVSO*, *Newsletter*, and *Annual Report* Production Editor, Archives, Library
Mike Simonsen	Membership Director and Development Officer
Matthew Templeton, Ph.D.	Science Director, *JAAVSO* Assistant Editor
Rebecca Turner	Operations Director
Kathy Vnek	Bookkeeper
Elizabeth O. Waagen	Senior Technical Assistant, *JAAVSO* Associate Editor, *AAVSO Newsletter* and *Annual Report* Editor
Donna Young	Lead Educator, Chandra Education/Public Outreach Office, SAO/NASA

AAVSO Volunteers

AAVSO members are very generous with their time and talents. Many of the programs and services we offer would not be possible without the participation of member volunteers. They are regularly involved in teaching new observers, writing articles for our publications, vetting submissions to the *Variable Star Index*, and the creation of charts and comparison star sequences.

We take this opportunity to recognize these special people who volunteered during the fiscal year, and to say *thank you* for another year of valuable contributions of time and expertise.

Mentor Program

Patrick Abbott
Barry Beaman
John A. Blackwell
Tom Bretl
Tim Crawford
Bill Dillon
Shawn Dvorak
Robert Fidrich
Bill Goff
Keith Graham
Tim Hager
Jerry Hubbell
Rick Huziak
Roger Kolman
Michael Linnolt
Ken Menzies
Peter Nelson
Stefano Padovan
Alan Plummer
Chuck Pullen
Donn Starkey
Chris Stephan

Variable Star Index (VSX) Moderators

Robert Fidrich
Patrick Wils

Charts and Sequences

Thom Bretl
Tim Crawford
Robert Fidrich
Keith Graham
Jim Jones
Mati Morel

Speakers Bureau

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Tom Bretl
Tim Crawford
Pamela Gay
Keith Graham
Albert Holm
Kate Hutton
Roger S. Kolman
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AAVSOnet

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Muazzez Lohmiller
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Volunteer Translators for the Manual for Visual Observing of Variable Stars

Fatemeh Bahrani
Jaime García
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Dominique Naillon
Seiji Tsuji

AAVSO Part-time Help

We also take this opportunity to recognize our part-time help, and to say *thank you* for a job well done.

Aaron Sliski
Anisha Sharma
Shouvik Bhattacharya

4. Science Summary: AAVSO in Print

These pages present a partial listing of all literature using AAVSO data or resources. The majority of these listings were taken from the arXiv.org preprint archive, with others contributed directly by the authors themselves. It is intended to show the extent to which the observations of AAVSO observers are used in modern astronomical literature.

AAVSO data contributed by thousands of observers over decades is vital to variable star research. Annually, AAVSO Headquarters receives from 200 to 300 requests for data from researchers, members, observers, and educators. The AAVSO data are used extensively to correlate multi-wavelength observations of variable stars, to schedule ground-based and satellite observations, and for analysis of stellar behavior. Papers using AAVSO data are published by researchers, members, observers, and AAVSO staff. These papers are a testimony to the dedication and contribution of thousands of observers around the world who contribute data to the AAVSO International Database.

G. J. Madsen, B. M. Gaensler, "A Precision Multi-Band Two-Epoch Photometric Catalog of 44 Million Sources in the Northern Sky from Combination of the USNO-B and Sloan Digital Sky Survey Catalogs" (Sep 24, 2013)

Jeremy Shears, "The British Astronomical Association and the Great War of 1914-1918" (Sep 20, 2013)

G. Kordopatis, G. Gilmore, M. Steinmetz et al., "The RAdial Velocity Experiment" (RAVE): Fourth data release" (Sep 17, 2013)

Hilding R. Neilson, Richard Ignace, Gary D. Henson, "Long-term polarization observations of Mira variable stars suggest asymmetric structures" (Sep 16, 2013)

R. Lopez-Coto, O. Blanch Bigas, J. Cortina et al., "Search for TeV gamma-ray emission from AE Aqr coincident with high optical and X-ray states with the MAGIC telescopes" (Sep 10, 2013)

L. Molnar, L. Szabados, R. J. Dukes et al., "Analysis of the possible Blazhko-effect Cepheid V473 Lyrae" (Sep 9, 2013)

M. E. Lohr, A. J. Norton, U. C. Kolb et al., "One, two or three stars? An investigation of an unusual eclipsing binary candidate undergoing dramatic period changes" (Sep 6, 2013)

Paula Szkody, Anjum S. Mukadam, Boris T. Gaensicke et al., "Hubble Space Telescope and Ground-Based Observations of V455 Andromedae Post-Outburst" (Sep 5, 2013)

E. Banyai, L. L. Kiss, T. R. Bedding et al., "Variability of M giant stars based on Kepler

photometry: general characteristics" (Sep 4, 2013)
M. Hillen, T. Verhoelst, H. Van Winckel et al., "An interferometric study of the post-AGB binary 89 Herculis I Spatially resolving the continuum circumstellar environment at optical and near-IR wavelengths with the VLTI, NPOI, IOTA, PTI, and the CHARA Array" (Aug 30, 2013)
Makoto Kishimoto, Sebastian F. Hoenig, Robert Antonucci et al., "Evidence for a receding dust sublimation region around a supermassive black hole" (Aug 29, 2013)
John C. Martin, Franz-Josef Hambsch, Raffaella Margutti et al., "The Tell-Tale Heart: Brightness Fluctuations in the Decline of SN 2009ip" (Aug 16, 2013)
Elia M. Leibowitz and Liliana Formiggini, "The peculiar light curve of the Symbiotic Star AX Per of the last 125 years" (Aug 16, 2013)
Joseph E. Rodriguez, Joshua Pepper, Keivan G. Stassun et al., "Occultation of the T Tauri Star RW Aurigae A by its Tidally Disrupted Disk" (Aug 9, 2013)
Ivan L. Andronov, Vitalii V. Breus, "Variability of the Spin Period of the White Dwarf in the Magnetic Cataclysmic Binary System EX Hya" (Aug 8, 2013)
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Janet A. Mattei Research Fellowship Program This fund enables a visiting scientist, postdoctoral researcher, or student to perform research at AAVSO Headquarters with the goal of disseminating the results throughout the astronomical community.

Margaret Mayall Assistantship Fund This fund helps finance a summer student at AAVSO Headquarters who works on variable star-related projects and research while learning about the AAVSO and variable stars in general. Only the accumulated interest and not the principal may be used.

Solar Fund This fund helps to pay the staff costs of administering the section and publishing the Solar Bulletin, and to offset travel expenses for visiting solar researchers.

AAVSOnet Fund This fund pays for refurbishment and maintenance of telescopes, cameras, mounts, computers, software, and hardware required to operate the robotic telescope network.

Member Sponsorship Fund Funds donated to this program pay the membership dues for those active variable star observers who want to become members of the Association but cannot afford the dues.

Student Meeting Scholarship Fund Donations to this fund pay for up to 10 student registrations per annual meeting of the AAVSO.

Contributor-Specified Restricted Funds Gifts and contributions made to the Association for restricted purposes as specified by the donor thereof. All such restricted funds of the Association shall be administered in strict accordance with the instructions of the donor. The Association is not obliged to accept any assets so offered.

Corporate Affiliate Program
The American Association of Variable Star Observers

Today, corporations are taking an increasingly active role in supporting non-profit organizations. The AAVSO's Corporate Affiliate program is an opportunity for your company or organization to increase its visibility while simultaneously demonstrating your support for astronomy and science research and education.

Our program is designed to enhance your corporate image and offers the chance for you to be a good corporate citizen by supporting a worthwhile non-profit organization. It will help you sell more products or services and increase positive awareness in astronomy-related markets and amongst customers, potential customers, and the professional and amateur astronomy communities.

There are subtle, yet important differences between a corporate charitable contribution and a sponsorship program. For example, charitable contributions are usually given with little notoriety or fanfare. A sponsorship program offers a highly public opportunity to show your support. Contributions usually come from corporate philanthropy budgets, whereas sponsorships generally come from the advertising and marketing budgets because of the high visibility they provide. Sponsorships can be written off as a full business expense, like promotional printing expenses.

We take this opportunity to recognize the generosity of our 2012–2013 corporate sponsors: Santa Barbara Instruments Group, Swinburne Astronomy Online, *Astronomy* magazine, *Sky & Telescope* magazine, Diffraction Limited, Unihedron, DC3 Dreams, and Quantum Scientific Imaging, Inc..

If you would like more information about becoming a Corporate Affiliate of the AAVSO, please contact the Development Director at aavso@aavso.org

The AAVSO's 100th Anniversary Meeting at Cambridge and Woburn, Mass., 2011

Corporate Affiliate Program
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	Contributing Affiliate $2,500–4,999 Annually	Supporting Affiliate $5,000–9,999 Annually	Sustaining Affiliate $10,000–24,999 Annually	Partner Affiliate $25,000 and up Annually
Named service supporting sponsor				×
Three additional high-traffic page listings			×	×
Text and link listing in the footer of AAVSO email			×	×
Free registration to meetings		**ONE PERSON**	**TWO PERSONS**	**THREE PERSONS**
Listing in the *AAVSO Annual Report*		×	×	×
Listing in the *AAVSO Newsletter*		×	×	×
Subscription to the *AAVSO Journal*	×	×	×	×
Static home page and support page listing, logo, and link	×	×	×	×

details on next page

AAVSO Corporate Affiliate Program Description

Static Home Page and Support Page Listing

Your logo, linked to your home page on our Home and Support pages as well as the footer of every page on our website. Our website is visited by nearly 500,000 visitors annually.

***Subscription to the* Journal of the AAVSO**

The *Journal of the AAVSO* is the leading refereed scientific journal on variable star-related topics.

***Listing in the* AAVSO Newsletter**

The *AAVSO Newsletter* is in electronic format so we can offer your logo linked to your home page from our newsletter. It is issued quarterly, reaching approximately 1,500 subscribers.

Free registration at AAVSO Fall and Spring meetings

Spring 2014—Ontario, California, joint meeting with the Society of Astronomical Sciences (SAS) and Center for Backyard Astrophysics (CBA)
Annual (Fall) 2014—Woburn, Massachusetts

Text message and link in the footer of our email deliveries

600 to 700 *My News Flash* emails are issued daily. These can be several different messages queued up and randomly generated to keep them fresh.

In total, we generate approximately 330,000 emails annually to our list subscribers.

Three additional high traffic pages

Again, your logo, linked to your home page on three more AAVSO web pages.

Named Service Supporting Sponsorship

Our busiest pages are service pages we provide:

- **Light Curve Generator**—generates custom light curves online
- **Web Obs**—online tool for submitting observations
- **Variable Star Plotter (VSP)**—our automated chart generator

These are limited naming opportunities, such as "The ABC Company Light Curve Generator." These will be grandfathered listings. First come, first served basis, continued indefinitely as long as the corporate sponsor participates at this level.

For information please contact us at aavso@aavso.org or call 617-354-0484.

NOTES

The American Association of Variable Star Observers

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Discovering the Universe through variable stars