AAVSO

The American Association of Variable Star Observers

Annual Report
2017–2018

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The American Association of Variable Star Observers
49 Bay State Road
Cambridge, MA 02138-1203
United States

Telephone: (617) 354-0484
Fax: (617) 354-0665

email: aavso@aavso.org
website: www.aavso.org

Annual Report Website: www.aavso.org/annual-report

On the cover...

Top: Attendees at the 2018 AAVSO Annual Meeting, Lowell Observatory, Flagstaff, AZ

Bottom: (clockwise from upper left) Stella Kafka; Bob Stephens, Kristine Larsen, Stella Kafka; Bert Pablo, Matt Craig, Richard Berry; Percival Lowell

Picture credits

In addition to images from the AAVSO and its archives, the editors gratefully acknowledge the following for their image contributions: Bob Stephens, Barbara Harris.

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1. The AAVSO in a nutshell

Member-observer Barbara Harris

The AAVSO is a 501(c)3 non-profit association, whose mission is to enable anyone, anywhere to participate in scientific discovery through variable star astronomy. As such, the AAVSO is building an international community of Citizen Astronomers (professional astronomers, educators, students, non-professional observers) who are working collectively to acquire data, study, and understand aspects of variable stars. The AAVSO is a membership organization, generously supported through memberships and donations by its international community.

The main aspects of the AAVSO's program are:

- The AAVSO International Database: a repository of variable star data, populated by observations from the AAVSO international community. Data acquired by visual, DSLR, CCD, PEP and solar observers of more than 25,000 variable objects are currently available to the research community through this database. Relevant data quality control is conducted by AAVSO staff and volunteers.
- The AAVSO's International Variable Star Index (VSX): this is a super-catalogue of known variable star information for more than 500,000 known variable stars. Objects in the catalogue include survey variables and new stars discovered by AAVSO observers.
- AAVSO alerts, campaigns, and fostering a close collaboration with the international astronomical community: the AAVSO builds connections between professional and non-professional astronomers, ensuring that AAVSO observers participate meaningfully in international collaborations resulting in cutting-edge science.
- AAVSO observer support: AAVSO software provides tools (such as finding charts, comparison stars, visible targets, etc.) for observers to plan and execute observations of appropriate targets. A helpdesk at the AAVSO headquarters provides answers and feedback to observers as needed. AAVSO-provided software also encourages the AAVSO community to engage in data processing and analysis.
- AAVSO educational/training activities: these aim at introducing various observing techniques, software, and the physics of variable stars.
- An active peer mentoring program: this program connects experienced observers with novices to provide guidance on aspects of variable star observations.
- The Journal of the AAVSO: a refereed publication that welcomes scientific, technical, and educational manuscripts by both professional and non-professional astronomers alike.

Through our work, our observing sections, our meetings, and our forums the AAVSO is building an international collaboration of individuals who are interested in understanding some of the most dynamic and serendipitous phenomena in the universe.

AAVSO Officers, Council Members and Headquarters Staff

You may contact these persons through AAVSO Headquarters.

Officers

Director	Stella Kafka	(term of office 1 February 2015—)
President	Kristine M. Larsen	(2015–2018)
1st Vice President	Bill Stein	(2017–2018)
2nd Vice President	Kevin B. Marvel	(2015–2018)
Secretary	Gary Walker	(2009–2018)
Treasurer	Robert Stephens	(2017–2018)

Council Members

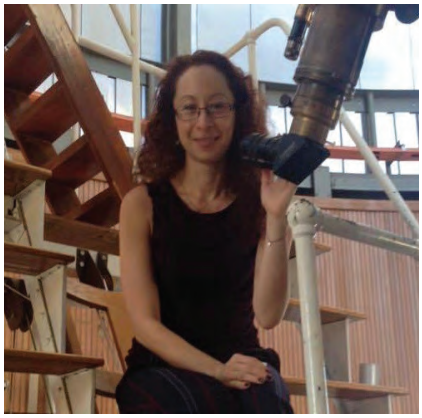
Richard Berry	(2016–2018)
Tom Calderwood	(2016–2018)
Michael Cook	(2017–2019)
Joyce A. Guzik	(2015–2019)
Michael Joner	(2016–2018)
Katrien Kolenberg	(2014–2018)
Arlo Landolt	(2017–2019)
Gordon Myers	(2017–2019)
Gregory R. Sivakoff	(2016–2018)

AAVSO Headquarters Staff

Sara J. Beck	Technical Assistant (Science Operations), Special Projects
Stella Kafka, Ph.D.	Director
Sebastián Otero	External Consultant, VSX Team, Spanish Translations
Michael Saladyga, Ph.D.	Technical Assistant, *JAAVSO*, *Newsletter*, and *Annual Report* Production Editor
Kathy Spirer	Operations Manager
Owen Tooke	Administrative Assistant
Elizabeth O. Waagen	Senior Technical Assistant (Science Operations), *JAAVSO* Associate Editor, *AAVSO Newsletter* and *Annual Report* Editor

2. The Year in review

Annual Report of the Director for Fiscal Year 2017–2018



Stella Kafka, PhD, Director

A year in review

What a year! TESS was launched, Gaia DR2 was released, the Parker Solar Probe promises to reveal unknown aspects of the solar corona, the Kepler telescope ran out of fuel and left a legacy of thousands of unknown variable objects … and we, at the AAVSO, have been busy focusing on completing projects that enhance our observers' resources, participating in key collaborations bringing exciting projects to our community, and ensuring that our databases and software are operational and secure. As exoplanet discovery and exploration is becoming routine in the science world, we make sure that AAVSOers have access to educational material which helps them enhance their observing skills and acquire data for the targets that need it. Our CHOICE courses are improving thanks to the constant attention and hard work of our volunteer instructors, the JAAVSO's content is expanding to include new subject matters, VSX reached (and surpassed) half a million entries, we connect our observers with exciting projects through our alerts, and we focus on updating our software and database infrastructure with an eye to long-term sustainability and security. Thanks to our volunteers, we provide a valuable mentor program, translations of our manuals, updated information in our observing sections, charts, sequences, and data validation.

In addition to improving our science program, we are responsible for building maintenance, curating our archive and our library, ensuring smooth communication between HQ and our community, providing assistance to our observers when needed, ensuring that memberships are renewed, and updating our community about our activities. We have a strong presence in key conferences where both professional and non-professional astronomers discuss new science and upcoming projects, and we bring our community together through our meetings and forums. We always talk to our members and observers worldwide, and welcome constructive comments and contributions; after all, our mission is to serve this international community and we

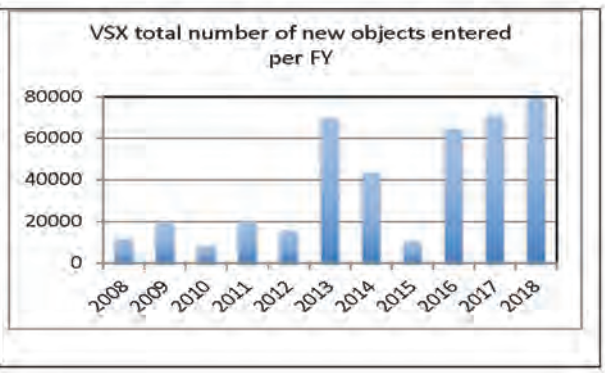
need to understand its needs and ensure that we provide the necessary resources.
All the above wouldn't have been realized without our community's support. Either through donations, memberships, or participation in NASA-funded scientific projects, funding has been secured which enables us to identify and hire the appropriate contractors to help us with Drupal migration, cyber security, IT, and software development. Our fundraising efforts enable us to re-design our servers, ensure frequent backups of our software and database assets, and maintain your favorite software. Because of your generosity, AAVSO staff work on data quality control, collaborate with volunteers, help new observers with their data, ensure our databases' quality, and curate more than half a million variable objects in VSX. The AAVSO is fortunate to have the support and encouragement of such an engaged and generous community, who enrich our databases with valuable data and help open the doors of variable star astronomy to all.

Here are some of the highlights from FY 2018:

Variable Star Index – improvements and updates

VSX is improving each year, enriching the database with new variable star submissions from individual observers and survey lists. In FY2018, we imported more than 80,000 new objects, totaling more than half a million objects in the VSX database. This is the most comprehensive (albeit not complete) database of updated variable star information, a unique and valuable resource to the research community. More on VSX can be found in the relevant section of this report.

New survey lists imported in FY 2018	
	# objects
ASAS-SN variables	59,760
Kepler ROT variables	856
Kepler K2 variables	8,064
SuperWASP RR Lyrae	129
Kepler puls. and rot.	1,350
ASAS-SN RCB	18
[MS98] misc. variables	550

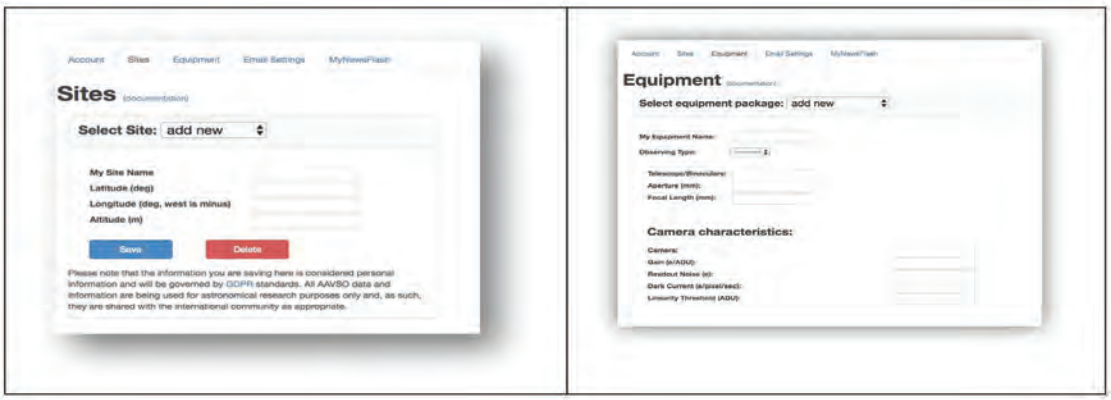


At the same time, we improve VSX's functionality based on our community's feedback. We generated a Frequently Asked Questions web page and we continue checking all new VSX submissions for accuracy, providing feedback when needed. Based on constructive forum comments, we assembled a team of volunteers from our international community to generate a comprehensive user's manual for VSX submissions, including examples and a detailed description of the material needed and relevant resources to

retrieve the material. The manual is considered to be a live guide – improvements will be implemented based on our community's feedback. We also established two new modes of for VSX submissions (beginner and advanced), including updates of existing records. In all cases, contributors will be acknowledged for their work on the VSX pages. The VSX manual can be found at https://www.aavso.org/vsx/

Exoplanet database (ExoDB)

A major new project launched in 2018 was our new exoplanet database, a project that was in the making for a couple of years. This project was triggered by discussions with professional astronomers who were interested in working with our community for exoplanet transit studies, and asserted that measurements of brightness variations vs time alone were not sufficient for their work. Thanks to the persistence and hard work of the exoplanet observing section leader, Dr. Dennis Conti, we designed a database that will ensure critical information on exoplanet transits is captured for long-term studies of their light curves and behaviors. The new database can be accessed through WebObs and was officially announced at the 2018 AAVSO annual meeting in Flagstaff, through a press release that was shared with hundreds of journalists around the world. More information can be found at: https://www.aavso.org/exoplanet-data



Observer Site & Equipment registration page

This is an online repository of information on observer equipment and observing site(s), and it provides an inventory of our observers' capabilities which can help the AAVSO provide appropriate targets for observers. Observing site information is also required for exoplanet data submission (as it is critical for timing information), therefore this new catalogue is required for the exoplanet database. This project was led and executed by volunteers, in particular George Silvis, working closely with HQ staff. Relevant

documentation accompanies the database, providing guidelines on how to fill out various fields in the forms.

Photometric Data Quality control updates

Ensuring that our light curves are of the high quality required for scientific projects is one of the priorities at HQ. Data quality assessment has been and is conducted by HQ staff, yet with the increase of data submissions, there was a need to recruit a team of volunteers who would help with the task at hand. To facilitate the team's work, "Zapper Validator", a software that helps identify discrepant data, was updated and disseminated to the team. We welcome more volunteer engagement in this team effort.

Updated "Standard Fields"

We added standard fields published by Arlo Landolt to the "Standard Fields" web page (https://www.aavso.org/apps/vsd/stdfields). Those additional fields enable our observers to determine transformation coefficients for their equipment at any time of year, as those multiple standard fields are spread out around the sky.

New Developer's Guide

To facilitate our collaboration with our volunteer and HQ programmers, and ensure we follow best practices that would lead to long-term maintenance and sustainability of our software, we composed a developer's guide. This handbook outlines guidelines for AAVSO software developers, outlining programming language requirements, software compatibility with our systems, and proper code documentation when producing software for the AAVSO.

Training material translations

A new translation of the DSLR manual in French is available; French and German translations of the Solar Observing Guide have also been completed and published. Translations have been made of the PEP guide in French, the exoplanet manual in French, and the web page "Variables: What are they and why observe them" in Uzbek.

CHOICE Courses

Thanks to the time and energy dedicated by our volunteer instructors, we continue offering our successful CHOICE course series, based on instructor availability. At the end of each course, we solicit participant course evaluations which are shared anonymously

with instructors – these help us identify challenges with the course material and improve course curriculum and format. Overall, the courses offered in FY2018 are:

Course Title	Instructor
CCD Photometry (Part 1)	Ed Wiley
Exoplanet Observing	Dennis Conti
Variable Star Classification & Light Curves	Blake Crosby
CCD Photometry (Part 2)	Phil Sullivan
Developing a Visual Observing Program	Michael Cook
How to use VStar	JoDee Baker-Maloney
DSLR Photometry	Mark Blackford

Technical Operations

2018 was a year of transformation and infrastructure upgrades. After performing an overview of our software, applications, hardware, back-end online security, and backups, we formed a plan to simplify our digital footprint, focusing on software that enables our community to plan, submit, and retrieve observations, projects with significant scientific yield, and a sustainable software structure that would enable better management of our databases and more pro-active upgrade of our tools. More details on our activities can be found in the "Astronomer's Corner". In short, we re-designed our live server and planned an identical development server which will help us test and upgrade software; we started migrating our web page from Drupal 7 to Drupal 8 and performing a necessary web page re-design and implementation (based on a user study); and we focused on improving and simplifying our backups, both on the AWC and on-site. Recognizing that cybersecurity is an issue for all organizations with an online presence, we started a system vulnerability assessment which will help us identify possible weaknesses of our firewall, which we will correct accordingly. Our best security assurance to our hundreds of observers is that we do not retain any sensitive financial information, and we are using our databases exclusively in a way that is appropriate to the mission of the AAVSO – sharing observations of scientific data, building collaborations between professional and non-professional members of our community, giving credit to our observers' hard work in scientific publications.

Outreach (FY2018)

- October 14, 2017: Astroassembly – Skyscrapers (Rhode Island); talk: "The AAVSO Program: How to contribute to cutting-edge science"
- October 16, 2017: RASC Edmonton (Edmonton, Canada); talk: "Observing Variable Stars with the AAVSO"
- October 17, 2017: University of Alberta Physics (Edmonton, Canada); talk: "The AAVSO Program: A Resource for Variable Object Research"
- October 21, 2017: Remote presentation at the Hellenic symposium of amateur astronomy; title: "The AAVSO Program: How to contribute to cutting-edge science"
- October 24, 2017: Online panel participation for high schools; topic: "Extra-terrestrials or a Zombie Apocalypse - What are the odds?"
- Week of November 13, 2017: IAU S339: Southern Horizons in Time-domain Astronomy (Stellenbosch, SA). Organized workshop on "Stellar variability: From citizen science to citizen astronomy"; Conference public talk: "Citizen Astronomy in the era of large surveys"
- November 22, 2017: Astronomical Society of Southern Africa (Cape Town, SA); talk: "Observing Variable Stars with the AAVSO"
- January 23, 2018: Concordia University Distinguished speaker; talk: "Studying Variable stars with the AAVSO"
- January 26, 2018: San Diego State University; colloquium: "The AAVSO Program: A Resource for Variable Object Research"
- March 8-11, 2018: Astronomical Society of Southern Africa Symposium 2018 (Cape Town, SA); talks: "The AAVSO for your research in the large surveys era" and "Citizen Astronomy in the Era of Large Surveys"
- April 5-8, 2018: Southern Star Astronomy Convention; talks: "Variable Stars and their Stories" and "The AAVSO Program: A Resource for Variable Object Research"
- April 10, 2018: Alachua Astronomical Society (Florida); talk: "Variable Stars and their Stories"
- April 11-13, 2018: University of Salisbury (Maryland); talk: "The AAVSO Program: A Resource for Variable Object Research"
- May 10-12, 2018: Pisgah Astronomical Research Institute (PARI; Ashville, NC); talks: "The AAVSO as a resource for Student Variable Star Research" and "Variable stars and their stories" (public talk). Also, multiple online presentations for summer interns at PARI in June and July.
- June 25, 2018: "Trimble-fest" (Irvine, California); symposium to honor Virginia Trimble's 75th birthday and 50th anniversary of her graduation from Caltech. Presented the AAVSO William Tyler Olcott Award for Distinguished Service to Virginia.
- July 22-28, 2018: RTSRE 2018 (Hilo, Hawaii); Keynote presentation: "The AAVSO as a resource for student research"

Treasurer's Report
October 1, 2017–September 30, 2018

Robert Stephens, Treasurer, AAVSO, 49 Bay State Road, Cambridge, MA 02138

Audited Financial Statements

American Association of Variable Star Observers
Statement of Financial Position
September 30, 2018

Assets	
Current Assets	
Cash and cash equivalents	$ 798,883
Prepaid expenses	5,223
Investments	12,903,911
Total Current Assets	13,708,017
Property and Equipment, Net of Accumulated Depreciation	1,265,009
Total Assets	**$14,973,026**
Liabilities and Net Assets	
Current Liabilities	
Accounts payable and accrued expenses	$ 45,759
Prepaid membership dues and meetings	53,299
Total Current Liabilities	99,058
Long Term Liabilities	
Security deposit and last month's rent re Annex	8,332
Net Assets	
Unrestricted	11,296,460
Temporarily restricted	201,382
Permanently restricted	3,367,794
Total Net Assets	14,865,636
Total Liabilities and Net Assets	**$14,973,026**

continued on next page

American Association of Variable Star Observers
Statement of Activities and Changes in Net Assets
For the Year Ending September 30, 2018

Changes in Unrestricted Net Assets	
Unrestricted Revenues, Gains, and Other Support	
Contributions and grants	$ 199,382
Investment interest and dividends	1,223,671
Membership dues and fees	76,649
Sales of publications and related material	9,941
Meeting fees	22,149
Annex rent	50,000
Unrealized losses on available-for-sale securities	(911,973)
Gain on sale of investments	338,680
	1,008,499
Net assets released by restrictions	26,103
Total Unrestricted Revenues, Gains, and Other Support	**1,034,602**
Expenses	
Program Services - research, data collection, publication and meetings	630,347
General and administrative	403,539
Fund-raising	23,258
Total Expenses	**1,057,144**
Increase in Unrestricted Net Assets	**(22,542)**
Changes in Temporarily Restricted Net Assets	
Contributions and grants	8,275
Investment interest and dividends	14,542
Unrealized gains (losses) on available-for-sale securities	(11,916)
Gain on sale of investments	4,425
Assets released from program restrictions	(26,103)
(Decrease) in Temporarily Restricted Net Assets	**(10,777)**
Changes in Permanently Restricted Net Assets	
Contributions	1,750
Increase in Permanently Restricted Net Assets	1,750
Increase in Net Assets	**(31,569)**
Net Assets—Beginning of Year	**14,897,205**
Net Assets—End of Year	**$14,865,636**

Variable Star Observing Campaign Highlights

Elizabeth O. Waagen

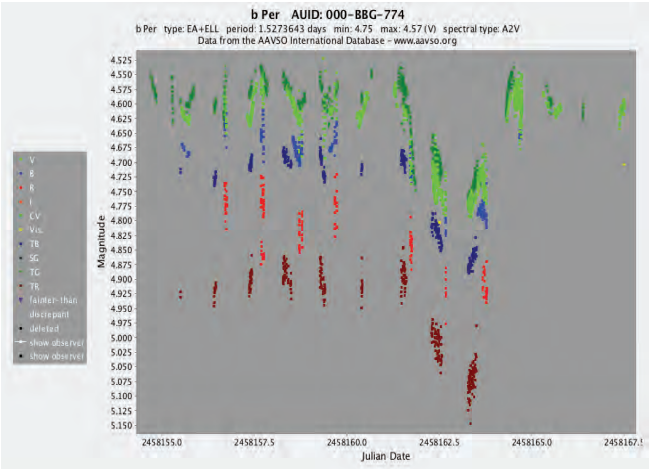
The AAVSO participates in many observing campaigns on variable stars. These campaigns arise from the request for assistance by an astronomer, or from the AAVSO itself in response to a discovery or other unusual stellar activity. Campaigns may run from a few days to weeks or months, or may even be ongoing for several years.

Observing campaigns carried out in FY 2018 by the AAVSO on established or suspected variable stars and on the 14 galactic novae discovered during the year may be read about via the AAVSO webpage on AAVSO Alert Notices for Observing Campaigns and Discoveries (https://www.aavso.org/aavso-alert-notices-for-observing-campaigns-and-discoveries). Note that numerous campaigns from earlier years listed on this webpage are still underway.

Below are a few highlights from the observing campaigns in which the AAVSO was involved this year.

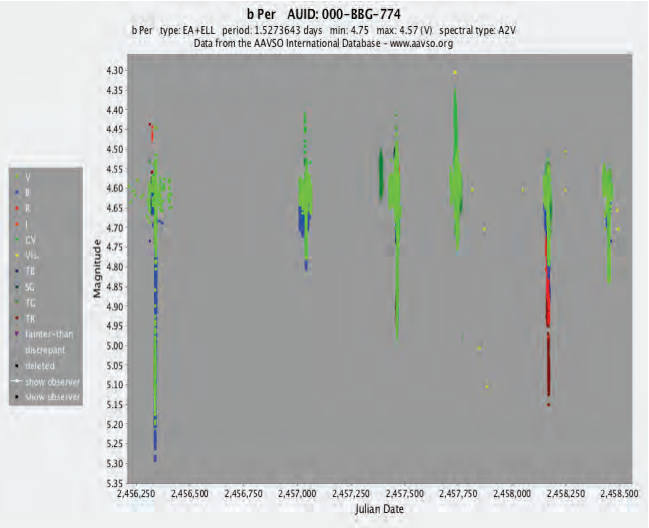
b Per (HD 26961)

The bright star b Per (HD 26961) continues to be of great interest. Two campaigns were carried out this year on this triple system - one beginning in January (AAVSO Alert Notice 610) and one beginning in October (AAVSO Alert Notice 655) - at the request of Dr. Donald F. Collins (AAVSO member, Swannanoa, NC) and colleagues Dr. Robert Zavala (US Naval Observatory, Flagstaff Station), Dr. Anatoly Miroshnichenko (University of North Carolina at Greensboro), and Jason Sanborn (Lowell Observatory).



The campaign in AN 610 was on the third star in this triple system, which was predicted to transit in front of the inner pair of stars (a primary eclipse) during the week centered on February 12, 2018, and time series photometry was requested. In AN 655, the target was also the third star, which was predicted to transit behind the inner pair of stars (a secondary eclipse) during the week centered on November 21, 2018, and time series photometry was again requested. Both campaigns

were successfully concluded as AAVSO observers provided multicolor photometry that showed the eclipses on February 12-14 UT (Figure 1) and November 20-22 UT, respectively.



These campaigns were the fifth and sixth in a series with AAVSO participation to observe transits among the three stellar components of this system in order to assist in untangling the complicated orbital relationships. AAVSO observers have observed six transits in this system (Figure 2), including the first recorded eclipse, which occurred in February 2013. Links to more information about this system and an animation, as well as to the four earlier AAVSO campaigns, may be found in the Alert Notices.

ASASSN-18ey (= MAXI 1820+070)

A new black hole X-ray binary candidate, ASASSN-18ey (= MAXI 1820+070), was discovered on March 11, triggering an immediate flurry of ground- and space-based professional observational campaigns. On March 19, Drs. Gregory Sivakoff (University of Alberta), Poshak Gandhi (University of Southampton), and Diego Altamirano (University of Southampton) requested AAVSO assistance in providing optical photometry in support of some of these campaigns and of additional ones being planned (AAVSO Alert Notice 624). Two days later, Dr. Tom Maccarone (Texas Tech University) asked for AAVSO observations in support of his VLT (ground-based, visible and infrared) and XMM (space-based, X-ray) observations (AAVSO Alert Notice 625). A month later ASASSN-18ey had stalled in its X-ray state evolution, and a multiwavelength "blitz" campaign occurred, with several facilities observing the binary over a 24-hour period; the AAVSO was asked to participate (AAVSO Alert Notice 630).

ASASSN-18ey continued to evolve over the following months, and AAVSO observers continued to monitor it faithfully. By late December, when the observing season ended, ASASSN-18ey had finally faded to fainter than V magnitude 17.8 and AAVSO observers had provided over 372,000 multicolor observations. Several astronomers are using AAVSO data in their analyses of this fascinating system.

FO Aqr

Beginning in July 2018, a campaign (AAVSO Alert Notice 644) was carried out on FO Aqr, an intermediate polar cataclysmic variable featuring a magnetized white dwarf that accretes from a low-mass companion star. This type of star has "high" (bright) and "low" (faint) states; the method of mass transfer is believed to change depending on the state.

When FO Aqr entered its low state in July, Drs. Colin Littlefield (University of Notre Dame), Peter Garnavich (University of Notre Dame), and Mark Kennedy (University of Manchester) requested AAVSO optical photometry until FO Aqr returned to its high state. Dr. Littlefield wrote: "AAVSO observations enable us to identify which periodicities are present in the light curve, and from that information, it is possible to draw conclusions about FO Aqr's accretion mechanisms. In particular, we are interested in using AAVSO data to test the hypothesis by Hameury & Lasota (2017) that FO Aqr's disk dissipates if a low state is deep enough."

This campaign was the third one on FO Aqr for these astronomers, with previous ones occurring when FO Aqr entered its low state in 2016 (first low state ever observed for this star; AAVSO Alert Notice 545) and in 2017 (AAVSO Alert Notice 598). AAVSO observers followed FQ Aqr closely through the observing season, and detected clearly when it returned to its high state in December. Two papers have been written to date that include analysis of the 2016 and 2017 AAVSO data, with AAVSO observers as co-authors.

Astronomer's Corner

Bert Pablo, Staff Astronomer

Change is on the horizon at the AAVSO. Some of it is tangible, like the new face our website will soon have, but much of it is below the surface. So as we gear up for what will definitely be an exciting 2019, let's take a look at everything that has been done over the past year.

First let's take a look at the new capabilities we have and are still adding for our users. We have officially released two new pieces of software. The first is the Site and Equipment Page. This allows users to put in information about the location and make up of their instrument packages. While this information is useful to keep track of for all of your observations, it is a necessity for our new programs and databases. As you have undoubtedly heard the AAVSO is officially in the exoplanet game with the launch of our new web application ExoDB. This tool provides a new way of submitting time series data, specifically geared towards exoplanet science.

Right on the heels of ExoDB is the long-awaited debut of our spectroscopy database. While it is not quite officially released, the application is already in beta testing and is almost ready. Since spectroscopy is very different in many respects from the photometry our community is accustomed to, we have been working diligently to construct new observing materials and manuals. This will provide our whole community the tools necessary for exploring variable stars in a new and different way.

Beyond our new applications much of this year has been spent redefining our technological footprint. Now you might be wondering why need to put effort into this, and it's a fair question. Unfortunately, despite the effort and time involved in such a project it's a necessary evil. The internet and how we access it is constantly changing, which means all of the programs we use and create must necessarily change as well. This invariably will cause issues, issues we could not foresee, or take steps to mitigate, within our current architecture. Therefore, we either kept things the same, working around bugs that would crop up, or had to interrupt service to our community to fix them. In order to make this process more seamless we are moving away from a "one server for everything" approach and segmenting our infrastructure into smaller more manageable chunks that will be both more efficient and more sustainable moving forward. This new design is being implemented as we speak, and will be the platform for our updated website.

Speaking of updates, the rebuilding and re-inventing of our infrastructure has allowed for a much needed update to all of our servers internal systems, from the operating system to Drupal, the website container itself. While much of this you won't notice, the changes to the website will be hard to miss. Due to fundamental changes in how Drupal behaves and interacts with other programs this necessitated some large rewrites of the underlying code, which will change the look and feel a bit from what you're used to. It will still be the same website content, just displayed in a slightly different way, which we hope will make your time on our website easier.

Finally, I wanted to make you aware of all the effort we are putting into security. One of the main reasons for updating our infrastructure is so that we are able to patch security vulnerabilities that are found with time. In the past we have been reactive, dealing with problems as they arose. However, that isn't a position anyone wants to be in and we are putting substantial effort into becoming more proactive. In addition to updates and infrastructure changes we are currently undergoing a full technical security assessment, so that we can be made aware of the areas that are problematic and can address them in due course. We take pride in being an organization you can trust with your legacy and we are doing everything in our power to stay that way.

The International Variable Star Index (VSX)

Sebastián Otero and Patrick Wils

This report covers activity from October 1, 2017 to September 30, 2018.

The International Variable Star Index is a continuously evolving database including most available variable star catalogues and stars published in variable star listings/journals plus new discoveries submitted by individual researchers.

It was created by amateur astronomer Christopher Watson and is kept by the AAVSO with the valuable input of individual contributors who revise known variable stars and submit new ones. All that information is included in our database after a strict moderation process.

VSX is mostly maintained by staff member Sebastián Otero and volunteer Patrick Wils. Sebastián reviews all submissions/revisions and contacts the observers so they can correct or improve the uploaded information. Questions about catalogues and data analysis -and especially issues concerning variable star classification - are continuously being discussed by e-mail as part of the moderation process. He also adds stars from alert pages, works on updates of existing records, prepares new lists of objects for upload, hides duplicate entries and works on inconsistencies between VSX, VSD (The Comparison Star Database) and the AID (AAVSO International Database). He also deletes variable comparison stars from sequences (the Sequence Team then replaces the "lost" comparison if needed).

Patrick works with data updates from journals and some other miscellaneous sources. He uploads lists of variable stars prepared by Sebastián, Klaus Bernhard and himself, helps replacing AUIDs in VSX when an already existing AUID in VSD is found and does some of Sebastián's duties when he's not available. He is always behind the scenes making changes and improvements to the database structure and the user interface and correcting bugs, things that may go unnoticed but make the VSX process faster and more efficient.

Below are some of the changes he implemented:

- At the beginning of the fiscal year we added a VSX Frequently Asked Questions (FAQ) page. Information that had to be propagated through individual e-mails is now being presented there. Information on data-mining, reference formats, photometry and passbands (including online spreadsheets to transform and correct data), identifiers, supporting documentation and submissions in general can be found in this new

resource.
- Catalog data from 2MASS, AllWISE, GALEX and APASS have been added when available in a new section of each star's detail sheet.
- Sky coverage plots can now be displayed.
- External links to ASAS-SN and Pan-STARRS1 data are now available

Volunteers

Volunteers play a major role in keeping VSX up to date and working smoothly. Patrick Wils has dedicated a lot of volunteer work over these years to add new variables or corrections made on known variables as they are published in journals, alert pages or even in web resources.
Klaus Bernhard continued helping us preparing lists for VSX import. It is not something straightforward because each paper or each variable star list comes with its own format and we need to extract the information in a format suitable for our database needs. A very important step in this work is to make sure that the new variables added are not actually duplicates of stars already included in VSX. So a thorough cross-identification of the new stars with our own records is always performed. We check the reliability of the published data so we can avoid overwriting good information with wrong numbers in the case of revisions and we make sure that we are adding bona-fide new variables in the case of the new entries. Patrick Schmeer has been helping us adding new objects from the alert pages or updating the information on existing ones.

We need more volunteers. If you have experience with variable star classifications, light curves, and if you have used VSX in the past, you might want to give these tasks a try:

- Checking Astro-ph papers;
- Checking various online journal papers;
- Preparing lists for VSX upload;
- Revising VSX records with obvious mistakes or missing information.

If you would like to join us, send a message to vsx@aavso.org

New Variable Types Added

We always try to update our variability types document by adding the most recent variable star types recognized in the literature.

The EL CVn (EL, systems consisting of a core helium-composition pre-white dwarf and an early-type main-sequence companion) and HW Vir (HW, systems consisting of a hot

subdwarf and a red or brown dwarf companion displaying reflection effect) subtypes of eclipsing binaries were added.
We also added the SN Ic-BL (Broad-lined SN Ic supernovae, sometimes called "hypernovae") subtype of supernova.

Number of Submissions and Revisions

- We've had 1084 new variables submitted to VSX by individual users (other than VSX Team members) this year (860 in 2016-2017).
- The number of revisions made by users more than doubled from 239 last year to 495 in 2017-2018.
- We currently have 376 different users that have submitted at least one submission or revision to VSX. 28 of them had their first VSX experience this year.
- The VSX Team updated data on 29468 known variable stars (3377 last year).
- The number of new objects added by our team keeps growing each year. For the fiscal year 2017-2018 we added 78272 new objects, while last year they were 69877.
- This means a total of 79356 objects (adding the 1084 objects submitted by individuals).

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.

VSX Submission Policy

Even though it hadn't been implemented yet by the end of the fiscal year 2017-2018, it is important to announce that a new Novice discovery checkbox has been implemented in the New Star Form and New Star Wizard so VSX users that do not have the interest to use survey data or make a deep analysis of their data can still submit their findings to VSX. We encourage full analysis but if someone has a random finding and doesn't feel like getting too involved in variable star analysis (e.g. asteroid observers), he/she can now submit their discoveries to VSX.

VSX Forum

We suggest all VSX submitters to use this forum for pre-submission discussions so everybody can share their experiences and learn from one another. There are very experienced observers among the VSX users so having them sharing a common space allow people to discuss their submissions, ask questions, post doubts and eventually get to the submission stage with a higher quality product.

Please keep using the forum in 2019. It is at: https://www.aavso.org/forums/about-aavso/vsx. And remember that to start discussions in the VSX Forum you have to create an AAVSO website account: https://www.aavso.org/apps/register/

Duplicate Records

VSX has currently over 600,000 records. We don't call them stars because there are still some duplicate records among them but we have been working hard with to minimize that problem over these years.

Hiding visible duplicates helps avoiding confusion when an observer finds two stars at nearly the same position and can't decide if there are actually two variable stars there or they are just one and the same. Software can be fooled by these duplicates too and our International Database may suffer the consequences with spurious reports being submitted. We surely don't want that!

In the framework of this primary record creation work (which means that all the information available is used to update a star's detail sheet), Sebastián hid 179 duplicate visible entries this year plus 88 unclassified (not visible for the public) duplicate objects. 6,553 duplicate records were hidden since the primary record creation work started back in 2011 (6,835 counting the unclassified ones). Patrick hid another 112 records this year after cross-identifications were made while importing new lists. This will always be work in progress. A total of 28,443 objects have been hidden since VSX was launched in 2005.

Incorrect Identifications Corrected

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

- 34 incorrect cross-identifications in VSX have been corrected this year (usually incorrect identifications made by surveys).
- 58 GCVS/NSV identifications have also been corrected.

It is nice that observers report incorrect identifications when they find them. Let us know if you find any.

Cross-Identifications (between existing entries) added

208 new cross-identifications between VSX records were established this year (2988 in total since 2011) and the resulting duplicates were deleted.

Work on VSX/AID: inconsistencies and problems with submitted data

Work to clean up the AAVSO International Database (AID) from errors caused by duplicate entries in VSX (most of them not visible to the public) has also continued. The fact that we have the same object listed two or even three times under different names and with different AUID's means that we may have data for the same object split in different records. Thus, the light curves are not as complete as they could be.

We individually corrected 124 such records in 2017-2018. Sara Beck moved all the observations to the new primary records and I deleted the AUID of the obsolete records so people can't submit data using the old identifiers anymore.

As usual, we have also contacted several observers to modify wrong observations reported to the AID that are found while analyzing AAVSO data to improve the information delivered in VSX. We urge observers to double-check their images to properly identify the stars being reported.

Remember that we periodically update the list of stars with companions that may cause identification or photometry problems. It can be found here: https://www.aavso.org/variable-stars-companions

Work on VSX/VSD: comparison stars that turned out to be variable

Finally, we don't want variable stars to be used as comparison stars, but this may happen sometimes.

There were not enough data some years ago to judge if some stars were variable or not and they could have been selected as good comp stars based on color or proximity. Now, with more survey data available or with observations provided by our observers, we can identify that some of those comp stars are actually variable. Work is being done to eliminate these stars from our sequences and find suitable replacements. 10 stars have been eliminated this year.

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 contribute to VSX and all the AAVSO staff that helps in the cleaning up process.

The AAVSO Network of Remote, Robotically Controlled, and Automatically Queued Telescopes (AAVSOnet)

Arne A. Henden and Mike Nicholas

The AAVSO Robotic Telescope Network, AAVSOnet, started in 2005 with a single telescope, SRO35, located in Sonoita, Arizona. In 2008 we added OC61 by partnering with the University of Canterbury in New Zealand at Mt. John Observatory. 2009 saw the addition of the first Bright Star Monitor at Astrokolkhoz Observatory near Cloudcroft, New Mexico. In 2018 there were eight active telescopes: the BSM systems (NM, South, Hamren, Berry, and NH), SRO50, TMO61, and OC61.

Each of these telescopes uses identical software: MaximDL for image acquisition; ACP and ACP Scheduler for controlling the telescope, camera and scheduling observations, and FocusMax for focusing each system. The AAVSOnet Software Automation system (ASA), designed and implemented by George Silvis, is used to maintain and manage jobs sent to the telescopes using comma-delimited EXCEL files. Each telescope is either at a University or located at a private site. Volunteers perform any local maintenance and operation. AAVSO members, as a free benefit, can propose to observe specific targets. These proposals are reviewed by a small Telescope Allocation Committee. Those approved are then put on the telescope queues. When images are taken, they are transferred back to HQ where they are automatically dark-subtracted and flat-fielded. Processed images are then placed on the AAVSO ftp site, and/or uploaded to the VPhot cloud analysis program at the discretion of the individual investigator. In the background we also extract all stars in every image to be placed into the on-line Epoch Photometry Database at a later date.

This year BSM_NH has under gone a name change to BSM_NH2 with the reconfiguration of its system to include a higher accuracy Paramount ME mount, loaned by Tzec Maun, a new ZWO ASI183mm-pro-cool CMOS camera and filter wheel and a new rollup enclosure, designed and built by Gary Walker. BSM_NH2 has been operational since September and is producing higher-quality data than the original system, with better tracked images and finer angular resolution. The original ST8-XME camera will be sent to BSM_Berry to replace the one loaned by Greg Bolt.

BSM_Hamren is moving to a drier site on the main island of Hawaii and will have an unobstructed view of the horizon. Mike Linnolt will continue to host the BSM_Hamren and is working with Gary Walker on setting up the new site with a new automated enclosure designed by Gary. A replacement for its failed camera has been donated by Dick Post. These changes will significantly improve the operation and reliability of this

valuable site. It is anticipated that BSM_Hamren will come on line in early 2019.

A new BSM system, BSM_TX, is being configured and should be ready for operation shortly. The site is located in west Texas. This system is owned by Dave Cowall, who is providing it for use by the AAVSOnet community. It is expected to be on-line in the spring of 2019. This will bring the total number of AAVSOnet sites to nine.

The original headquarters computer server (OCCAM) was replaced with a more secure and updated system. The new system has taken over the AAVSOnet image pipeline. A second identical server was also added as backup. The cost of both systems was paid for by Dick Post and was installed with the help of George Silvis. The AAVSOnet image pipeline software has been improved and made more reliable, thanks to the continued efforts by George Silvis, with help from Cliff Kotnik.

We continue to enjoy the support of many AAVSO member volunteers who manage, maintain and repair the AAVSOnet resources. Many thanks to Robert Dudley, Damien Lemay, Ken Menzies, Lou Cox, Jean-Bruno Desrosiers, Dave Hinzel, Duane Dedrickson and JoDee Baker for performing this valuable service. In addition, we'd like to thank our site managers and operators as well: Helmar Adler, Arne Henden, Nigel Frost, Bart Staels, Jon Holtzman, Dirk Terrell, Walt Cooney, John Gross, Peter Nelson, Greg Bolt, Mike Linnolt, Gary Walker and Bill Stein.

A web-page for the new BSM Section was created by Mike Nicholas, with help from Owen Tooke. It focuses on the BSM resources and provides members details on the equipment and how to propose their projects. Mike is the page Administrator, with help from Arne Henden, the Science advisor, and Ken Menzies, the Technical Advisor.

During 2018, a total of 15 new proposals were accepted, from professionals as well as amateurs. These included individual research, monitoring of objects for campaigns, and time series observations for some professional members of the AAVSO. The AAVSOnet telescopes collected 161,122 images of over 2,000 targets. Many of these are part of the BSM survey of all variables brighter than 8th magnitude.

The AAVSO Photometric All-Sky Survey (APASS)

Arne A. Henden

APASS started in late 2009 in the north, and about a year later in the south. The goal is to cover the entire night sky, with every object being observed on at least four photometric nights. The main survey covers the magnitude range 10<V<17 in the Johnson B&V and the Sloan g'r'i' passbands. The expected final astrometry will be within 150milliarcseconds; the photometry should be better than 0.02mag for bright objects. This catalog was designed to do for photometry what the positional catalogs (such as UCAC and USNO-A) did for astrometry: provide calibrated references in every CCD field of view.

The original survey was funded by the Robert Martin Ayers Sciences Fund. In 2014, the NSF awarded the AAVSO a 2-year grant to both complete the observations as well as produce a final catalog. As part of the NSF proposal, we are extending the catalog with a Bright Star Extension, covering the range 7<V<12 and with BVu'g'r'i'zY passbands. In 2017, we asked for and received a one-year no-cost extension to the original NSF grant, and later received another extension to July, 2018.

The equipment at each site is composed of two ASA N8 20cm astrographs, Apogee Aspen CCD CG16m (KAF-16083 sensor) cameras and filter wheels, coaligned on a Paramount ME. The northern system is located at Weed, NM; the southern system is at CTIO in the MEarth roll-off building.

To date, over 530,000 images have been taken on about 1500 nights (combined north and south). Ten data releases have been made, with the most recent one occurring in October, 2018. In DR10, a total of 128 million objects have a minimum of two observations each, covering about 99% of the sky. DR10 was a complete reprocessing of all images, using Sextractor for star-finding and centroiding, astrometry.net and custom plate solutions, DAOPHOT aperture photometry, and a new collation technique to find measurements of the same star. This completed the processing of northern and southern images taken through 2016. The APASS "means catalog" can be searched on-line at the AAVSO web site. The Epoch Photometry (individual measures) can also be searched on-line if you are an AAVSO member.

Doug Welch (McMaster University) has been the key person in the data reprocessing, gaining access to the Canadian SHARCnet parallel processing computer, and providing storage for all images and star lists. Brian Kloppenborg has created the new collation program, which has eliminated many of the inconsistencies of the original algorithm.

APASS is being used by many groups worldwide, and is also being used by individual researchers for obtaining precise photometry of their favorite targets. We get over a dozen requests annually from professionals who want access to the entire catalog. Within the AAVSO, APASS is being used primarily for the generation of photometric sequences around program stars, and photometric confirmation of new submitted variable stars to VSX. The VisieR group in France hosts DR10 publicly.

We are continuing observations with the APASS sites to fill in a few missing fields, and processing about a hundred additional nights of earlier data that were missing from DR10. Additional data releases will be made as these data are analyzed.

A great many people have been involved in the APASS development. The PI of the project is Arne Henden; Dirk Terrell has provided computers, software and analysis; Stephen Levine is the primary astrometry expert; Doug Welch is archiving all images and photometry, serving catalogs and performing the Sextractor and astrometry.net initial processing; Brian Kloppenborg creates the merged catalog; and Ulisse Munari is providing quality control and external comparisons. In addition, there are a large number of volunteers, staff and students, including at least: Tom Smith, Aaron Sliski, Alan Sliski, Ken Launie, Shouvik Bhattacharya, Anisha Sharma, Patrick Wils, John Gross, Bill Stein, Sebastian Otero, Matt Templeton, Doc Kinne and Sara Beck. The UNC group (especially Kevin Ivarsen and Josh Haislip) provided on-site support when APASS South was at Prompt; Jonathan Irwin has been enormous help since the system moved to MEarth, along with the CTIO telescope operators. We've also had equipment and software contributions from Tom Bisque (Software Bisque), Bob Denny (DC3 Dreams), Doug George (Diffraction Ltd.), Apogee CCD, and Don Goldman (Astrodon). We thank them all – without their support and help, this project would never have happened!

The Journal of the American Association of Variable Star Observers

John R. Percy, Editor

The Journal of the American Association of Variable Star Observers (JAAVSO) is the peer-reviewed research publication of the AAVSO, dedicated to variable star astronomy and a wide variety of related topics. It exists to disseminate the scholarly work of AAVSO members, observers and others to the AAVSO "family" and to the astronomical community at large; to demonstrate the scientific value of AAVSO data and thereby motivate AAVSO observers; to record the scientific content of AAVSO meetings; and to inform and inspire our members and others about variable star astronomy. It demonstrates, among other things, that small observatories, and skilled amateur astronomers, and student researchers can continue to make significant contributions to variable star astronomy.

In 2017-18, we published two issues, with well over 200 pages of content in total, in our (relatively) new large-page format. We continue to use an automated manuscript-handling system, and "blind" refereeing. The published papers covered the usual range of variable star topics, including papers on research with new data and old; instruments, methods, and techniques; data; education and outreach; history; book reviews; and abstracts of papers presented at AAVSO meetings. JAAVSO authors come from countries around the world, and include professional astronomers, amateur astronomers, and students. A typical issue contains about a dozen research papers and two dozen abstracts. This year, we began to publish short review/update articles, beginning with one on Young Stellar Objects by Professor Bill Herbst. Others are in the offing, and we are open to publishing either long or short reviews/updates on topics which are relevant to our readers. I have also continued to provide editorials on topics which I hope are both relevant and interesting. I would be happy, at any time, to receive suggestions about any aspect of JAAVSO, including possible topics for future editorials or review articles. One small concern: the range of topics of the research papers in recent issues has been rather narrow. We encourage papers on the observation, analysis, and interpretation on all types of variables, as well as on the topics mentioned above.

In late 2017, I surveyed the Editorial Board and Headquarters staff about the present and future of JAAVSO. Please see my editorial in Volume 45, Number 2. The AAVSO Council has struck a small committee to discuss and recommend on possible future directions for our flagship publication. It has also embarked on a search for a new Editor, since I do not plan on serving in that capacity forever.

As always, I am grateful to the Editorial Board for their advice and assistance, to the many voluntary and anonymous referees who ensure the integrity of the JAAVSO content, and to the Headquarters staff, especially Michael Saladyga and Elizabeth Waagen, for their hard work and excellent judgement in carefully editing and attractively formatting over 200 pages of informative but complex material.

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Volumes of the JAAVSO can be found at https://www.aavso.org/apps/jaavso/volumes/

Awards 2018

AAVSO Merit Award Recipient

Barbara G. Harris

"...in recognition of her years of dedicated service to the organization, selflessly contributing in numerous ways, including as a member of Council and multiple Committees, mentoring fellow observers, teaching the CHOICE course in DSLR Photometry, submitting over 38,000 variable star observations using multiple techniques, and in particular her valuable contributions to observing campaigns, including her discovery of the January 28, 2010, outburst of U Sco."

William Tyler Olcott Distinguished Service Award Recipient

Virginia Trimble

"...for her influential five-decade-long body of research in astronomy, including work on myriad types of variable stars; her outstanding service to the discipline through her annual reviews of advances in astrophysics as well as her work with professional organizations; her ability to bring to life the history of astronomy and communicate effectively with the public; and her invaluable service as a mentor and role model to multiple generations of astronomers."

AAVSO Director's Award Recipient

Dennis Conti

"...for his excellent leadership and work with the AAVSO Exoplanet program, training observers through the relevant CHOICE course, workshops, and manuals, creating and overseeing the design of the AAVSO exoplanet database, and his continuous involvement in cutting-edge science with HST and TESS.

Special Awards presented at the AAVSO 107th Annual Meeting

The AAVSO extends its grateful appreciation and sincere thanks to

Tyler Arnold, Zachary Burkhart, Keanu David, Prof. Carolyn Shiery

" for their valuable volunteer contributions to the AAVSO through their work on creating new marketing material promoting the AAVSO's work to the community."

The AAVSO extends its grateful appreciation and sincere thanks to

Juan-Luis González Carballo, David H. Hinzel, Gabriel Murawski, Sebastián A. Otero, Patrick Wils

" for their valuable volunteer contributions to the AAVSO and the variable star community through their work on generating the VSX new data submission manual."

Section Reports

Bright Star Network (BSM)

Section Leader: Michael Nicholas

The AAVSO Bright Star Monitor global telescope network has had a good year:

1. The BSM telescope network has implemented 6 proposals in the last three months of 2018.
2. A BSM web-page for the new BSM Section was created by Mike Nicholas and Owen Tooke, with help from the BSM Team. The page provides to members details on the equipment and how to propose their projects.
3. A poster, describing how the membership can use this free resource, was discussed at the Fall Membership meeting in Flagstaff.
4. The three BSM systems in the northern hemisphere have undergone modifications during the past 6 months:
   - BSM_NH2, New Hampshire, (Arne Henden/Helmar Adler) is coming back on-line at its new location, with a CMOS camera and a Paramount. The CMOS camera has already collected nightly images since October and appears to promise accurate photometry for brighter variables than previously possible.
   - BSM_NM, New Mexico, (Bill Stein/Dick Post) has seen the return and installation of its repaired/cleaned camera. The normal SW monsoon has ended, and the system is now conducting active imaging. It is receiving a pipeline improvement for local calibration processing of science images to complement the HQ pipeline.
   - BSM_Hamren, Hawaii, (Mike Linnolt) is currently inactive due to a camera failure. A new enclosure (constructed by Gary Walker) will be sent to Hawaii to replace the current "tarp" and the system will be moved to a drier location (owned by Mike L.). A replacement camera donated by Dick Post has been provided. This upgrade should provide a significant improvement in reliability and an increase in imaging. Hopefully the new system will be on-line in early 2019.
5. The two BSM systems in the southern hemisphere (Australia) continue to work well, under the operation of Greg Bolt and Peter Nelson. Greg Bolt has loaned his own camera for use at BSM_Berry, while a replacement camera for one which failed is being obtained.
6. The following table provides a summary of the number of nights where weather cooperated and science images were taken during the year:

System	Nights Run in 2018
BSM_NH2[1]	110
BSM_NM	73
BSM_Ham	42
BSM_S[2]	99
BSM_Berry[3]	149

1Combined nights from BSM_NH and the newer BSM_NH2 site. 2 "BSM_S operates every clear night. At this site this equates to approximately 30-40% of the year. Sometimes it will run all night, others only several hours." - Peter Nelson. 3BSM_Berry takes the prize where in one, 9-hour night, 66 targets were observed and 430 science images were recorded.

7. Finally, we have received an additional BSM network site through the generosity of David Cowall. Dave is offering the use of his 101mm refractor system in West Texas at no cost to the AAVSO and will permit the BSM Section to conduct ACP - scheduled imaging projects. Dave will be the "operator" and Frank Parks (new member) will be the "image reviewer". George Silvis is in the process of making the web connection and Arne Henden, Ken Menzies, Gordon Myers and Helmar Adler will help with setting up the calibration and image pipeline. Bob Denny, DC3 Dreams, will donate three Sloan filters to the existing list.

BSM_TX will consist of the following equipment:
Hardware:

- Televue NP101 Telescope (#1291)
- Losmandy 12 Tripod Extension (UEQ-7989)
- Technical Innovations RoboFocus
- SBIG STF8300M camera (#83F180299)
- SBIG/DL FW8-8300 8 position filter wheel (B, V, R, I, clear filters)
- Losmandy G11 mount (#HGM9606048) with Gemini II upgrade
- Shuttle DS77U5 computer with SSD and DIMM cards installed
- Web Power Switch
- BK Precision Digital Display DC Power Supply

Software:

- Windows 10, Maxim DL, ACP Expert, FocusMax

The membership will now have six BSM sites in 2019 for their observing and educational projects which should enhance the ability of the Bright Star Section to support our members and the mission of the AAVSO!

Charts and Sequences

Section Leader: Tom Bretl

The Charts and Sequences Team is made up of volunteers and staff who work behind the scenes to keep the Variable Star Plotter (VSP) as up-to-date, accurate, and useful as possible. The current members of the team are Arne Henden, Barbara Harris, Bob Stine, Bruce Sumner, John Toone, Robert Fidrich*, Keith Graham, Jim Jones*, Patrick Wils, Sara Beck, Sebastian Otero, Tim Crawford*, Tom Bretl*, Natalia Virnina, Brad Walter*, Matthew Templeton, Mati Morel, Michael Poxon*, Jack Davis*, Stella Kafka, and Elizabeth Waagen. (* members who submitted new or revised sequences)

The team continued to be very active this year. Here are some approximate numbers for January 1 through December 21, 2018:

- 555 new sequences
- 116 revised or updated sequences
- 65 CHET responses (some revisions, some new)
- 194 ASASSN sequences (some revisions, some new)

For comparison purposes, here are the totals from the last five years:

Year	New/revised Sequences
2018	687
2017	600
2016	597
2015	695
2014	259

The recent release of APASS DR10 has made it possible for the team to catch up on many past CHETs and sequence requests. More than 100 sequences were created, revised, or updated during just the first three weeks of December.

Thank you to all of the active team members who have pitched in to quickly fulfill requests for both new and revised sequences, and a very special thanks to Tim Crawford who has personally contributed almost 300 sequences during the past year. An average of approximately one sequence per day is a pretty amazing accomplishment!

Charts and Sequences links:

CHET submissions are made online at https://www.aavso.org/chet.
Requests for new sequences are made via email to compstars@aavso.org.
Complete instructions for doing so are given at https://www.aavso.org/request-comparison-stars-variable-star-charts.

Completed work is shared via a spreadsheet that is accessible at https://docs.google.com/spreadsheets/d/1mR4l7bElFYZl5lwkkVEBwByCNXwiKCMzlPS1IAx0QvQ/edit?hl=en&pref=2&pli=1#gid=317284472.

Every few months all observers are made aware of new and revised sequences via the AAVSO website News. Links to past updates can be found at https://www.aavso.org/category/tags/charts-and-sequences-updates.

The team website continues to be a work in progress at https://www.aavso.org/sequence-team-homepage, but it already provides access to a number of helpful files.

The sequence team is currently developing a new website where members can find things like SeqPlot instructions, sequence creation guidelines, and information about photometric resources other than SeqPlot. This should prove especially useful to new team members. At the moment the site consists only of links to relevant files, and is definitely a work in progress.

Eclipsing Binary

Section Leader: Gerard Samolyk

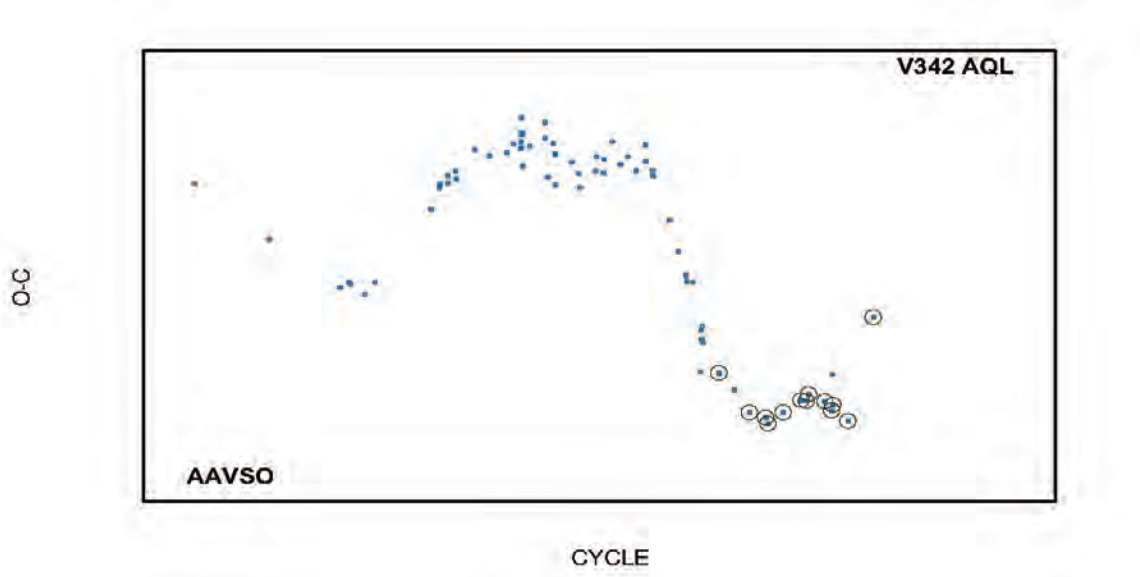
As of now, we have comparison stars for all of the stars on the AAVSO EB legacy program. Many of the other stars frequently observed by our group also have comp stars. I would like to thank the AAVSO chart and sequence team for their work in this area.

In 2018, two papers containing 774 times of minima of 313 stars observed by 18 observers were submitted to the JAAVSO in 2018. 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.

In the past year, 193 of the 201 stars on the legacy program were observed. ZZ Boo and Delta Lib have not been observed since 2016. Both of these stars have periods that are close to an even multiple number of days and are sometimes not observable from a

given longitude for a year or more.

Last year I reported that V342 Aql had not been observed for a few years. In 2018 a single time of minimum was observed. This TOM indicates that another significant change of period has occurred, as shown by the O-C plot below. More observations are needed to follow up on this. This star has a three hour totality so a long observing run is required to obtain a time of minimum.

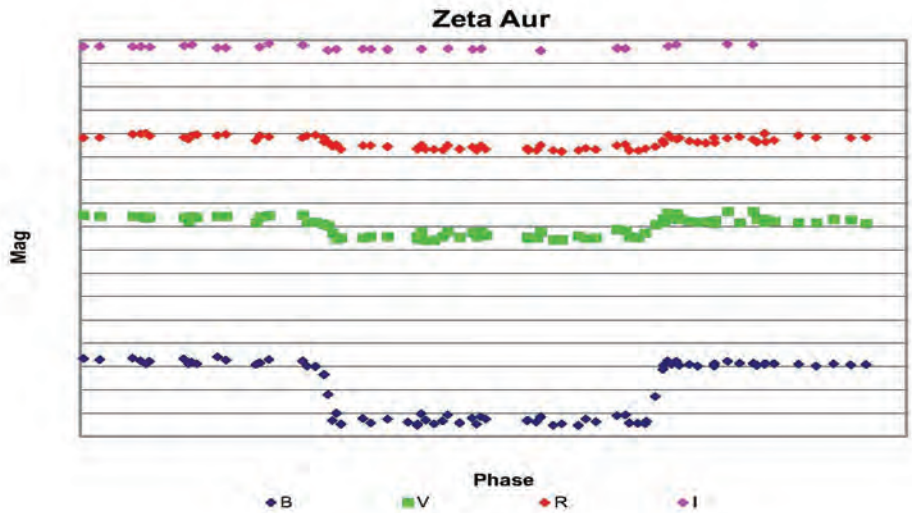


An O-C plot for V342 Aql from 1935 through 2018. The circled points are times of minima observed with CCD. The rest were observed visually or photographically.

An eclipse of Zeta Aur will occur in the fall of 2019. These eclipses occur every 2.7 years. The table below lists a description of the components.

Component	A	B
Spectral Type	K4	B7
Diameter (Suns)	200	5
Luminosity	2100	400

As the B7 type star passes behind the K4 type star, most of the light loss will be in the short wavelengths. Because of the size difference, the partial phases of the eclipse are very short, only a couple of days for each. The important dates are: October 24 – 28 for the first and second contacts and December 1 – 5 for the third and fourth contacts. The system will be in total eclipse for the entire month of November. This is a bright star but is a perfect target for those who are observing Epsilon Aur since it is in the same field.



Three eclipses of Zeta Aur observed over the past ten years plotted to phase. Because the loss of light is due to a B7 type star being eclipsed by a much brighter K4 type star, the eclipse depth is negligible in the I band but is a half magnitude deep in the B band. No U band data were available but the eclipse is about 1.5 magnitudes deep in that band.

Exoplanets

Section Leader: Dennis Conti

This past fiscal year (October 1, 2017 – September 30, 2018) has been a busy one for the AAVSO in its support of exoplanet research. This was particularly true in two areas: (1) completion of the AAVSO Exoplanet Database, and (2) the AAVSO's support of TESS (Transiting Exoplanet Survey Satellite) - NASA's latest exoplanet discovery mission.

Similar to its legacy of archiving data on variable stars, the AAVSO, through its Exoplanet Database, can now offer the professional community with an archive of exoplanet time-series observations by amateur astronomers. Such information can be used to help refine the ephemerides of known exoplanets, as well as to determine Transit Timing Variations (TTVs) that may be indicative of additional companion planets. Exoplanet observations can be submitted through new WebObs forms, and archived data can then later be downloaded by exoplanet researchers.

The most consequential exoplanet event this past year was the launch of TESS. After a successful launch on April 18, 2018, and commissioning, TESS began its science operation. For the first year of operation, TESS will conduct an all-sky survey of the Southern Ecliptic Hemisphere, followed by a year-long survey of the Northern Ecliptic Hemisphere.

Even though it is a space-based telescope, a transit detection by TESS needs to be confirmed by follow-up ground observations since the light from many stars could be blended together in TESS' large photometric aperture. Thus, the TESS science team has established a rigorous pipeline process for moving such a detection to a "confirmed" status. The first step in this pipeline consists of both professional and amateur ground-based observers conducting observations to determine if the TESS detection represents a true exoplanet transit or is a "false positive." A common example of such a false positive is the result of the drop in light of an eclipsing binary near the target star that mimics an exoplanet transit when the light of both are blended together in the TESS aperture The subgroup that is responsible for this determination is the TESS Follow Up Program, Subgroup 1 (SG1).

To facilitate participation in SG1 by its members, the AAVSO established a qualification program whereby members who successfully completed this program would be recommended to the TESS SG1 lead as a TESS follow-up observer. So far, over a dozen AAVSO members have become certified TESS SG1 observers through this qualification program.

In addition to establishing this qualification program, the AAVSO Section Lead developed an extensive guide for conducting and submitting SG1 observations that has now been adopted by the TESS SG1 lead for use by other participants in the SG1 program. Also, the AAVSO Section Chair developed an extension to AstroImageJ for automatically analyzing the existence of and possibility of near-by eclipsing binaries being the source of TESS false positive transit detections. This feature is now also being used by participants in other exoplanet surveys such as KELT.

During this past year, the AAVSO continued to provide its members with training on exoplanet observing through two CHOICE course offerings. Over 120 AAVSO members have now completed the Exoplanet Observing course since its inception in February 2017.

Also, during this period, updates were also made to "A Practical Guide to Exoplanet Observing." This document is used as material for the exoplanet CHOICE courses and is also being used as a stand-alone document for use by both amateur astronomers and educational institutions interested in exoplanet observing.

Finally, during this past year the Exoplanet Section Leader conducted a number of outreach activities. These included:

1. Presentation at NEAIC 2018: "Amateur Astronomer Participation in the TESS Exoplanet Mission."

2. Presentation at NEAF 2018: "The TESS Exoplanet Mission and Amateur Astronomer Participation."
3. Presentation at SAS 2018: "Exoplanet False Positive Detection with Sub-meter Telescopes."
4. Presentation on amateur astronomer participation in TESS as part of the Johns Hopkins University Applied Physics Lab (APL) Colloquium Series.

Long Period Variable (LPV)

Section Leaders: Andrew Pearce and Frank Schorr

The AAVSO LPV section reached a steady state in 2018 after years of rejuvenation in 2016 and 2017.

The LPV Section web page continues to be fully functioning and can be found at https://www.aavso.org/aavso-long-period-variable-section.

A number of activities were conducted in FY 2017/2018 which included:

- The LPV of the month page was continued successfully throughout the year and was widely publicised in the LPV Forum and in the monthly *AAVSO Communications*. Brief descriptions and preliminary analysis was performed on the following stars in the last 12 months: R, Aql, R Cnc, T Cam, Chi Cyg, Z Tau, V Boo, S Cas, T UMi, U UMi, R Nor, SS Vir, R LMi and S Aur. Thanks to Frank Schorr and Alfredo Glez-Herrera for contributing articles throughout the year. The Section reiies on contributions from members and observers to keep this series going. Unfortunately we did not receive a lot of support in this regard in 2018 and therefore the frequency of these articles will reduce to quarterly in 2019.
- An interesting article published in the January 2018 *AAVSO Newsletter* was an analysis of LPV observations over the past 10 years. This was primarily done to ascertain the current observing levels for LPV's across the AAVSO both visually and via CCD as there were concerns that the coverage of LPV's had diminished in recent times. The pleasing aspect arising out of the analysis was that the number of visual observations and the coverage of the LPV Legacy Program stars has remained essentially constant over the last 10 years. Furthermore the number of non-visual observations has varied more than for visual observations on an annual basis and the coverage of LPV Program Legacy stars is significantly less than for visual observations. A future focus area for the Section is concerning another outcome from the analysis which found that for both types of observations a significant fraction (40%) of the stars observed have less than 10 observations per year. There may be an argument to encourage observers to stop following these poorly observed stars and focus more on others

which have more well defined light curves or where gaps can be plugged in these light curves.

- Stan Walker (previous Director of Variable Stars South) prepared an interesting article on the changing face of LPV observing. Stan focused on the relationship between visual and CCD/PEP observations in the context of how each type of observing technique can contribute to furthering our knowledge of LPV's. The article is contained on the LPV Section web page.
- Good coverage has been maintained on R Aqr throughout the year supporting Chandra and HST observations of this star as requested by Dr. Margarita Karovska (Harvard-Smithsonian Center for Astrophysics) in AAVSO Alert Notices 535, 589 and 600. A total of 939 observations were made in FY 2017/2018. This is a multi-year campaign leading up to the predicted date of the next eclipse of the system in 2022.
- As outlined in AAVSO Alert Notice 645, Michael Stroh (Ph.D. candidate, University of New Mexico) requested AAVSO assistance in monitoring 19 LPVs in support of a VLA campaign studying SiO masers. This campaign runs until October 2019. Nearly 1,400 observations were made from the start of the campaign in July 2018 until end of FY 2017/2018. Observers are encouraged to maintain a good coverage of these stars throughout 2019.
- All LPV Legacy, LPV Legacy South and Percy List stars are included in the AAVSO Target Tool which will allow all observers to effectively plan an LPV observing program suited to the particular observer.
- Links to recent scientific papers regarding LPVs where AAVSO observations have been used or referenced continue to be updated on a quarterly basis.
- Frank Schorr continues to maintain the LPV Hump page which contains a lot of data and discussion on these interesting longer period Miras which show a hump or double maximum in their light curve.

The primary goals of the LPV 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 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.

Photoelectric Photometry (PEP)

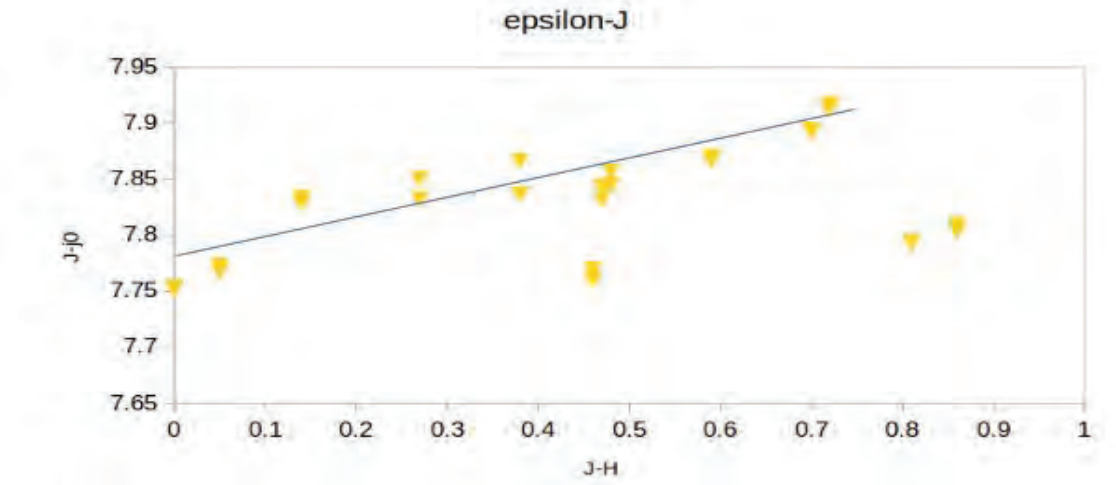
Section Leader: Tom Calderwood

A Near-IR Puzzle – Part I

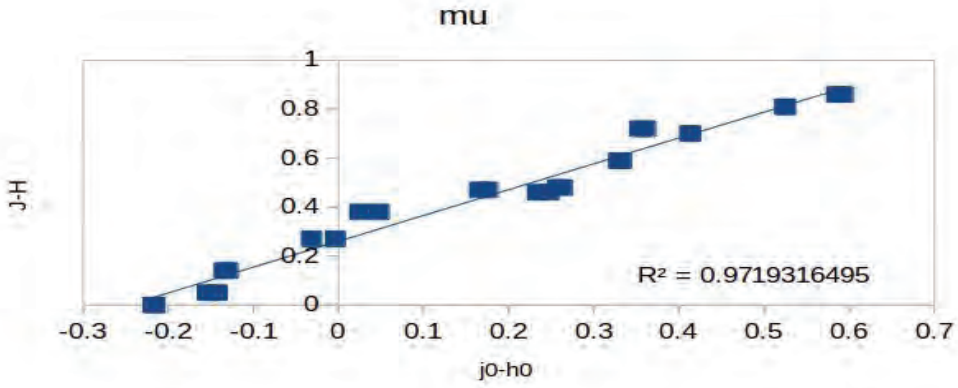
The PEP group is still working to get the Optec SSP4 near-infrared photometers back into regular use. One challenge is to establish transformation coefficients so that everyone's photometry can be interpreted in a standard system. In the CCD world, B and V transformations are usually established by imaging a "standard" open cluster having stars with a wide range of B-V values. Ideally, the magnitudes you measure will exactly match the standard magnitudes, but the best you can hope for is that your magnitudes exhibit a deviation from standard that is linear in B-V. The transformation value for a band is found by plotting, for each star, the deviation of your extinction-corrected instrumental magnitude from the standard magnitude versus the standard B-V. In photometric lingo, this is V-v0 vs. B-V, (see JH example, below). A least-squares fit is made to the points, and the slope of the line gives the transformation.

Cluster stars are generally too faint for PEP observers working with photodiode photometers. We use a closely-spaced pair of bright red and blue stars. Our calibration is essentially the same process, except that we "fit" a line to just two stars at opposite ends of the B-V range (reliable magnitudes are essential). There are several suitable pairs in the northern hemisphere, and it is best to establish calibration with more than one pair.

In the near-IR (J and H), there are no usable pairs of reddish/bluish stars. Reliable, bright JH magnitudes are hard to come by, so we need to measure multiple stars in the hope of averaging out the errors. Since we cannot use clusters, we are forced to make an "all-sky" calibration, picking out targets over a considerable range of altitude and azimuth. Below is an example calibration run on thirteen stars, each measured twice.



By tossing out three outlier stars at J-H= 0.46, 0.81, and 0.86, one gets a tolerably good linear fit for the rest. But why are the Terrible Trio so discordant? Are they faint and thus hard for the scope to pick up reliably, or are their magnitudes perhaps not particularly well established? The 0.46 star is rather dim, but the others are plenty bright, and all three are among the more-reliable magnitudes in the UK Infra-red Telescope catalog. Very strange–and this observation run is not a fluke: other calibrations had problems with the same three stars. Further, if you think the epsilon-J plot looks squirrely, the epsilon-H was simply dreadful. The enormous puzzle, however, is μ: the transformation for the J-H color index:



The μ plot is set up differently from the epsilons (J-H versus j0-h0), but the basic idea is the same. Here, the correlation, using all thirteen stars, is excellent. How is this possible given the problems with the epsilons?
To be continued....

Short Period Pulsator

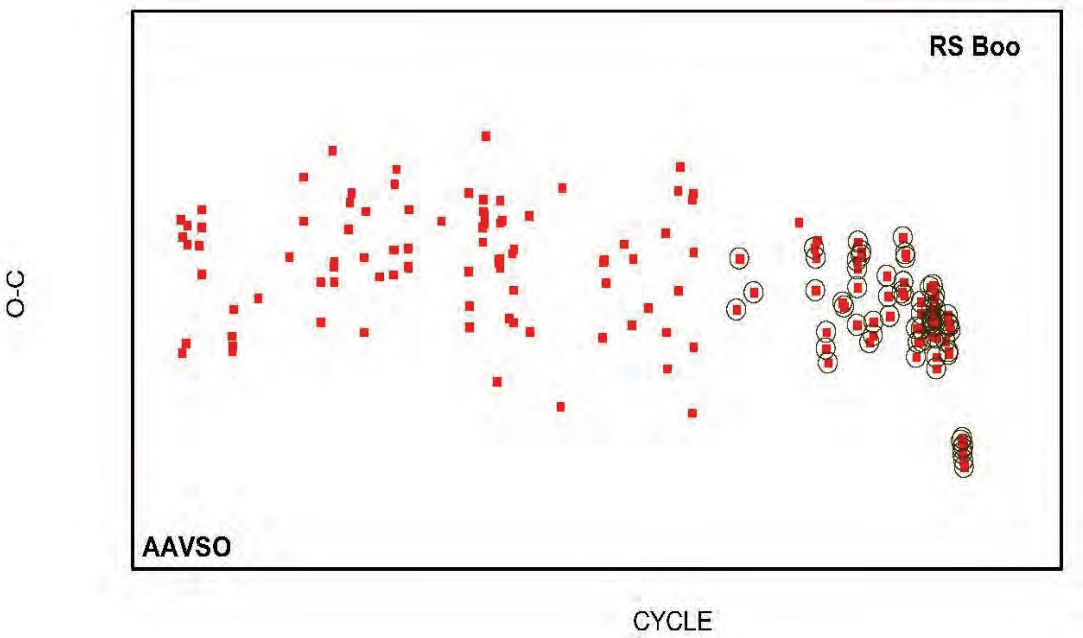
Section Leader: Gerard Samolyk

Once again, all of the stars in the AAVSO legacy program were observed. In 2018, Six of these stars that exhibit the Blazhko effect were heavily observed, SW And, AC And, RS Boo, XZ Cyg, DM Cyg, and AR Her. Most observers only observe these stars near the time of maximum, however observations at all phases including minimum and maximum are important when analyzing Blazhko stars because the brightness and phase at both of these extremes vary during the Blazhko cycle.

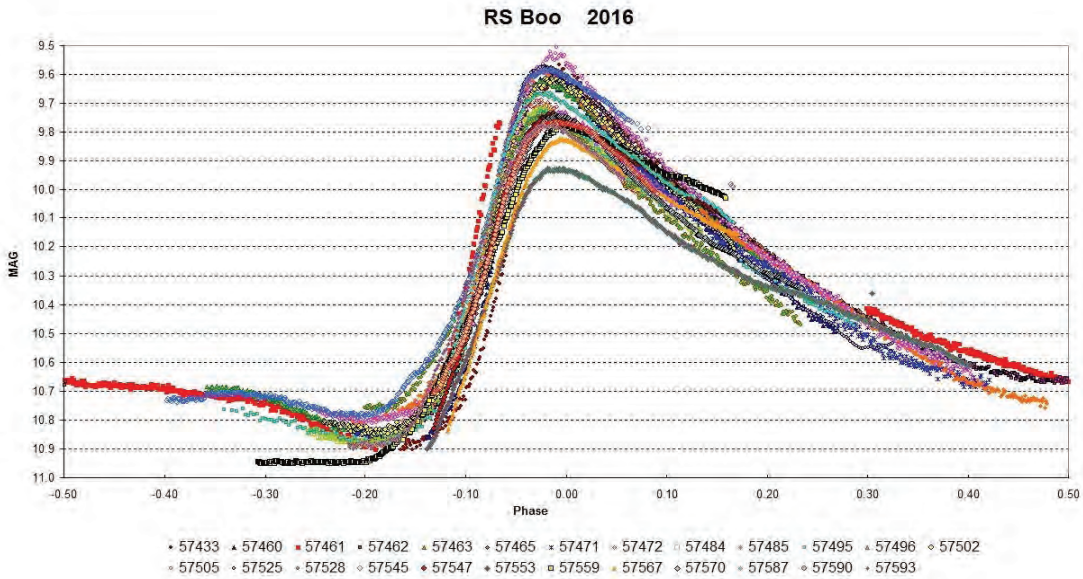
A paper containing 375 times of maxima of 86 stars was published in the JAAVSO. This paper contained the reduction of data sent to the section chair by seven observers in 2018. Any observer who would like to contribute data to these papers in the future should upload their observations to the AID and send a copy to gsamolyk@wi.rr.com

Two more papers containing times of maxima measured from visual observations of RR Lyr stars made by the RR Lyr committee since the 1960's have been published in the JAAVSO. This project is on track to be completed in 2019.

In 2018, a large deviation in the times of maxima for RS Boo was noted (as shown in the O-C plot below). This occurred after the period had been relatively stable for over a half century. This star also exhibits a Blazhko effect, as shown in the phase plot below, we should make this star a priority over the next few years. First, to verify the current period, and second, to determine if the Blazhko period has also changed.



O-C plot for times of maxima of RS Boo using the light elements from 4th edition of the GCVS. Maxima that were observed using CCD's are circled. The vertical scatter is due to the Blazhko cycle.



Observations of RS Boo plotted by phase with each night's observations are color-coded. The variations in magnitude at maximum and minimum as well as phase shifts are evident.

Solar

Section Leader and SID Group Leader: Rodney Howe
Sunspot Group Leader: Kim Hay

Sun Spot Group

The sun is now approaching the quiet time and is becoming somewhat less active, although with ups and downs on a daily basis, as we go into the solar minimum. Kim Hay from Yarker, Ontario, Canada, has done an excellent job of collecting, cleaning, and creating the monthly American Relative numbers for the *Solar Bulletin*. There was a total of 83 observers who contributed 12,558 observations (September 2017 – September 2018). Their efforts should be applauded as they continue to monitor our nearest star. We also have many awards to be given for our sunspot observers based on past certificates, and running numbers for FY 2018 (see table below).

Sunspot Awards 2018

Obs Code	Name	2018 Award
ERB	Bob Eramia	100
DMIB	Michel Deconinck	100
FTAA	Tadeusz Figiel	500
BDDA	Diego Bastiani	500
ONJ	John O'Neill	500
JGE	Gerardo Jimenez Lopez	500
JDAC	David Jackson	500
MWU	Walter Maluf	500
MJAF	Juan Antonio Moreno Quesada	1000
SONA	Andries Son	1000
MUDG	George Mudry	1000
DJOB	Jorge del Rosario	1000
CVJ	Jose Carvajal	1500
MARE	Enrico Mariani	1500
AAX	Alexandre Amorim	1500
KROL	Larry Krozel	2000
HOWR	Rodney Howe	2000

Table continued on next page

Obs Code	Name	2018 Award
VIDD	Dan Vidican	2000
ASA	Salvador Aguirre	2000
AJV	Javier Alonso	2500
BARH	Howard Barnes	2500
LEVM	Monty Leventhal	3500
URBP	Piotr Urbanski	4000
VARG	A. Gonzalo Vargas	4500
DUBF	Franky Dubois	4500
KNJS	James & Shirley Knight	4500
WILW	William M. Wilson	4500
FUJK	K. Fujimori	4500
TESD	David Teske	4500
BROB	Robert Brown	4500
CKB	Brian Cudnik	5000
ARAG	Gema Araujo	5500
CHAG	German Morales Chavez	6000

SID Group

For the last 12 months, overall SID submissions have been stable. Our observer ranks have remained consistent with between 14 and 17 submissions each month. There was a total of 21 observers submitting reports and a total of 140 reports were sent in for fiscal year 2018. Thanks to all VLF observers for their efforts in monitoring, data analysis and report generation.

Two observers are eligible for the traditional award for over 40 observations this year.

SID Awards 2018

Obs	Name	Level
A-138	Salvador Aguirre	50 reports
A-146	Ken Menzies	50 reports

Young Stellar Object (YSO)

Section Leader: Michael Poxon

Once again it is good to see that more observers are coming on board, and with data from a variety of wavebands – not just us visual folks! In this connection the forum announcements and Alert Notices have proved very useful in foregrounding certain objects that need attention. As a very rough-and-ready experiment I called up a few sample light curves and observer details from the LCG. All data below were taken from a 600-day timespan.

Star	No. of Observations	No. of Observers
RW Aur	1583	81
CQ Tau	299	21
V730 Cep	490	16
V1117 Her	872	32
RR Tau	1313	39
UX Ori	432	24
SU Aur	744	11
VX Cas	301	16
YZ Cep	266	10

These figures demonstrate several facts: stars that have been on the AAVSO program for a long time (RW Aur and RR Tau for example) have the greatest number of observations as well as the largest number of separate observers. Stars that have exhibited interesting recent behavior (RW Aur and V1117 Her) also have a high number of observations (quite rightly!), but what surprises me is that the brighter objects in the list such as CQ Tau, YZ Cep and and SU Aur have low numbers of both observations and observers! Bear in mind that CQ Tau is even visible with decent binoculars when bright, and is one of the most active stars on the list. YZ Cep is next to a naked-eye star, and SU Aur is next to another bright YSO. These stars should be on the observing lists of those with small telescopes! Also, rather bizarrely, circumpolar stars like YZ Cep and VX Cas likewise seem to be relatively neglected. I do understand that while there may be some sort of cachet (whether conscious or not) in observing the fainter objects, observers – especially those with very modest equipment – need to follow as many objects as possible. There is something for everyone here, so the small scope owners should not feel left out!

3. Planned Giving

Planned Giving

Charitable contributions to the American Association of Variable Star Observers can have benefits that last a lifetime - and beyond. A bequest or life-income gift that includes the Association will support variable star research and education for generations to come. Your legacy can be made in a variety of ways that can have dramatic tax and financial rewards for donors.

The AAVSO is recognized by the IRS and the state of Massachusetts as a 501c3 nonprofit scientific and educational organization. Gifts of all denominations are welcomed, and may include cash, securities, and other gifts. Unrestricted contributions may be made in any amount, and are tax-deductible to the extent allowed by the law.

The following information is intended only to show some ways by which you can make a charitable gift or bequest and thereby minimize federal tax liabilities. These examples are of a general nature only and should not be applied to your specific situation without first consulting your attorney or financial adviser.

A Gift of Appreciated Stock

Appreciated Stock makes an excellent charitable gift. Under current tax laws, when an appreciated asset (such as stock) is sold, a capital gains tax is due. By making a charitable gift of the appreciated stock, you can avoid or delay the capital gains tax. You can also take an immediate income tax deduction for the current fair market value of the stock, no matter what was originally paid for it.

To take a deduction for gifts of appreciated stock at their current value, you must have owned the stock for more than 12 months. Such gifts are deductible up to 30 percent of your adjusted gross income in the year of the gift. Any unused deduction amounts may be used in as many as five subsequent tax years.

A Bequest Through Your Will

One of the most simple and popular ways to make a gift that will live after you is to give through your will. You can make a gift bequest to benefit the AAVSO by providing a dollar amount, specific property, percentage of your estate, or the remainder (what's left). Such a designation can reduce your estate taxes. In many cases, a simple change to your will can add this bequest and does not require rewriting your most recent will.

Create a Charitable Remainder Trust

Donors and spouses can benefit from lifelong payments from such a trust. The donor selects the rate of return from these income arrangements and also chooses a fixed or fluctuating annual payment to be made to the designated parties as long as they live. Capital gains tax may be completely bypassed and you will receive a tax deduction based on the age of the income recipient and the rate of return chosen.

Establish a Charitable Lead Trust

In a charitable lead trust, assets (generally cash or securities) are transferred to a trust that pays income from the fund to your favorite charity or charities for the number of years you select. At the end of the designated time period, the trust terminates and the assets are given back to the person you name. This trust helps to lower estate and gift taxes that would otherwise be due on the assets. This option is especially attractive if you want to leave your children or grandchildren assets in the future, but not immediately.

Design a Gift Annuity

In exchange for a gift of cash, stock, or securities, the AAVSO will pay you, you and your survivor, or another person named by you, a guaranteed income for life. In addition, you receive a substantial income tax deduction in the year of the gift, and part of the annual payment is non-taxable. Your annuity payment and tax deduction are based on the age and income of the recipient.

Consider a Deferred Gift Annuity

A deferred gift annuity is similar to a gift annuity except that payments begin for you at a future date of your choice, such as your retirement. Your tax deduction and the annual rate of return on your annuity increase the longer you wait to start payments. This is an excellent retirement planning method to implement during prime income producing years that will benefit you later.

Use Your Life Insurance

Insurance is another simple way to make a substantial future gift at a level that would not be possible at the same level in cash. Name the AAVSO the owner and beneficiary to receive the proceeds of an existing life insurance policy. You will receive a tax deduction for approximately the cash surrender value, thereby reducing your tax liability in the year of the gift.

An alternative is to purchase a new life insurance policy naming this organization as owner and beneficiary. With this option, you receive an income tax deduction for each premium made and make possible a major gift to your favorite charity with a modest annual payment (or one-time premium payment).

Look to Retirement Accounts for Gift Opportunities

Account funds (IRAs or company plans) beyond the comfortable support of yourself or loved one may be given (like life insurance proceeds) to the AAVSO by proper beneficiary designation. Large pension plan assets can be subject to double or triple taxation (federal estate, federal income, and state death and state income tax) that virtually eliminates the benefits to heirs if tax-wise alternative planning is not arranged.

Plan a Gift of Real Estate

For some people, a gift of land, primary residence, or vacation home is a preferred way to make a gift. You will receive a tax deduction for the full fair market value, avoid all capital gains tax, and remove this asset from future estate taxes. One option is to give real estate while you retain a life tenancy. This provides a substantial income tax deduction by giving (deeding) your home or farm to your favorite charity now. You continue to live there, maintain the property as usual, and even receive any income it generates. At your death the property will be sold and the proceeds will support the mission of the AAVSO.

We are very grateful to all our donors, who are listed in Appendix 4.

Appendix 1. Observer Awards

AAVSO Observer Awards (presented at the 107th Annual Meeting in Flagstaff, Arizona, November 17, 2018)

Award/recipient	*Affiliation***	*Country*	*Interval*	*Total*
OVER 125,000 VISUAL OBSERVATIONS*				
Frank Vohla	02	Germany	1989-2018	131,392
OVER 100,000 VISUAL OBSERVATIONS*				
Andrew Pearce		Australia	1989-2018	101,834
Sandor Papp	03	Hungary	1983-2018	101,613
OVER 75,000 VISUAL OBSERVATIONS*				
Kenneth J. Medway		Great Britain	1973-2018	75,078
OVER 25,000 VISUAL OBSERVATIONS*				
Alexandr S. Maidik		Ukraine	1998-2018	25,371
OVER 10,000 VISUAL OBSERVATIONS*				
Antonio Padilla Filho		Brazil	1987-2018	10,336
OVER 5,000 VISUAL OBSERVATIONS*				
Peter Molnar	03	Hungary	2003-2018	8,005
Robert F. Swanberg		USA	1962-2018	7,866
Walter J. Kaminski		USA	1959-2018	7,014
Thomas C. Bretl		USA	1975-2018	6,515
Albert G. Dill		USA	1993-2018	6,175
Ivan Sergey		Belarus	2004-2018	6,087
Sherrill Shaffer		USA	2008-2018	6,015
Geert Hoogeveen	04	Netherlands	1975-2018	5,600
Laszlo Kocsmaros		Rep. of Serbia	2009-2018	5,231
Arthur Sturm	02	Germany	1996-2018	5,096
OVER 1,000 VISUAL OBSERVATIONS*				
Javier Alonso	15	Spain	2004-2018	4,941

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Observer Awards, cont.

Award/recipient	*Affiliation***	*Country*	*Interval*	*Total*
Mark A. Bradbury		USA	1992-2018	4,566
Edwin Van Dijk	04	Germany	1995-2018	3,379
Vincent R. Coulehan		USA	1972-2018	3,267
Andrew Beaton	27	Canada	2002-2018	3,258
Lance E. Shaw		USA	1996-2018	3,067
Jerome A. Hudson		USA	1960-2018	2,359
Ivan Vincze	03	Hungary	1990-2018	2,260
Paulo S. Reis Fernandes	13	Brazil	1997-2018	1,647
Tony Vale	20	Great Britain	2015-2018	1,316
Michel Deconinck		France	2014-2018	1,300
Bodo Wichert		Germany	2015-2018	1,255
Steven L. Koontz		USA	2016-2018	1,099
Igor Yatsenkov		Russia	2014-2018	1,043
Dominique Proust	01	France	1980-2018	1,037
OVER 100 VISUAL OBSERVATIONS*				
Hernan De Angelis		Sweden	2017-2018	949
Frank Krafka		USA	2001-2018	687
Keith Geary		Ireland	2002-2018	679
Andy Howell		USA	1964-2018	665
Richard Roberts		USA	2017-2018	660
Tamas Jakabfi	03	Hungary	2003-2018	469
Marc Eichenberger		Switzerland	2003-2018	409
Gabriel Murawski		Poland	2012-2018	370
Andreas Kammerer	02	Germany	2001-2018	358
Raymond B. Howard		USA	2017-2018	308
Katarina Holmquist	19	Sweden	2014-2018	298
Benny Colyn	05	Belgium	1998-2018	236
Zoltan Magyarics	03	Austria	2017-2018	211
Irina Sagaybins'ka		Ukraine	2018-2018	209
Richard A. Loslo		USA	2017-2018	200
Marcin Figuła		Poland	2018-2018	198
Mike Stone		USA	2017-2018	193
Elena Odintsova		Ukraine	2018-2018	180
Charles F. Trefzger		Switzerland	1990-2018	163
Roberto Valdomiro Silva		Brazil	2017-2018	162

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Observer Awards, cont.

Award/recipient	*Affiliation***	*Country*	*Interval*	*Total*
Charles E. Stewart		USA	2018-2018	161
Jason J. Rivet		USA	2016-2018	137
William H. Carini		USA	1985-2018	127
Cledison Marcos da Silva		Brazil	2017-2018	126
Preston Pendergraft		USA	2016-2018	125
Jean Pierre Dechoz		France	2016-2018	125
Arturo Purroy		Spain	2013-2018	112
Szabolcs Cziniel	03	Hungary	1992-2018	110
Becky Ramotowski		USA	2001-2018	108
Fabio Fujiwara	13	Brazil	2012-2018	106
Jonathan Poppele		USA	2016-2018	106
OVER 2.0 MILLION CCD OBSERVATIONS*				
Franz-Josef Hambsch	05	Belgium	2002-2018	2,062,698
OVER 800,000 CCD OBSERVATIONS*				
Shawn Dvorak		USA	1981-2018	851,595
OVER 700,000 CCD OBSERVATIONS*				
Teofilo Arranz		Spain	2005-2018	794,631
OVER 600,000 CCD OBSERVATIONS*				
Gerard Samolyk		USA	1975-2018	632,611
OVER 500,000 CCD OBSERVATIONS*				
Geoffrey Stone		USA	2016-2018	544,533
Tonny Vanmunster	05	Belgium	1976-2018	515,413
OVER 400,000 CCD OBSERVATIONS*				
David Cejudo Fernandez		Spain	2010-2018	442,782
Gordon Myers		USA	2007-2018	409,852
Lewis (Lew) Cook		USA	1974-2018	408,063
OVER 300,000 CCD OBSERVATIONS*				
Joseph H. Ulowetz		USA	2010-2018	303,288

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Appendix 1. Observer Awards

Observer Awards, cont.

Award/recipient	*Affiliation***	*Country*	*Interval*	*Total*
OVER 100,000 CCD OBSERVATIONS*				
James A. Boardman		USA	2012-2018	105,189
Tamas Tordai	03	Hungary	1986-2018	104,615
Douglas E. Barrett		France	2011-2018	101,425
Timo J. Kantola		Finland	2009-2018	101,012
Yenal Ogmen		North Cyprus	2004-2018	100,969
Maarten Vanleenhove	05	Belgium	2014-2018	100,127
OVER 50,000 CCD OBSERVATIONS*				
Stephen M. Brincat		Malta	1984-2018	56,530
Laurent Corp		France	1997-2018	54,352
John W. Rock		Great Britain	2012-2018	62,879
OVER 10,000 CCD OBSERVATIONS*				
Pablo Lewin		USA	2017-2018	24,573
Sjoerd Dufoer	05	Belgium	2001-2018	22,315
Jim Seargeant		USA	2015-2018	19,538
Marco Ciocca		USA	2011-2018	11,539
Ivaldo Cervini		Switzerland	2017-2018	11,051
Tadeusz Smela		Poland	2014-2018	10,669
Tom Polakis		USA	2017-2018	10,367
Robert B. Jenkins	34	Australia	2013-2018	10,273
OVER 1,000 CCD OBSERVATIONS*				
Matthew F. Knote		USA	2018-2018	6,582
Kristie B. Caplikas		Australia	2018-2018	5,546
Dan Crowson		USA	2017-2018	5,446
Mario A. Morales Aimar		Spain	2015-2018	4,849
Gabriel Murawski		Poland	2012-2018	4,525
John F. Briol		USA	2012-2018	4,226
Heinz-Bernd Eggenstein		Germany	2009-2018	3,893
Richard E. Schmidt		USA	2018-2018	3,034
Joseph P. Seitz		USA	2017-2018	2,558
Claudio Lopresti	18	Italy	2017-2018	2,420
Rafael Gonzalez Farfan		Spain	2014-2018	1,959

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Observer Awards, cont.

Award/recipient	*Affiliation***	*Country*	*Interval*	*Total*
Jean-Francois Gout		USA	2016-2018	1,741
Francisco Sevilla Lobato		Spain	1996-2018	1,594
Jeff W. Robertson		USA	2013-2018	1,583
William S. Rea	29	New Zealand	2015-2018	1,581
Jean-Bruno Desrosiers		Canada	2014-2018	1,529
Klaus Wenzel	02	Wenzel	2004-2018	1,401
Andrew Pearce		Australia	1990-2018	1,330
Matthew S. Bundas		USA	2017-2018	1,264
Rob Solomon		Australia	2014-2018	1,236
Stanley Shadick	27	Canada	2011-2018	1,204
Charles Galdies		Malta	2017-2018	1,183
John C. Ruthroff		USA	2008-2018	1,165
Huei Sears		USA	2017-2018	1,091
Dmitry Matsnev		Russia	1991-2018	1,079
Erik J. Schwendeman		USA	2016-2018	1,062
Mervyn Millward		Australia	2011-2018	1,055
OVER 10,000 PEP OBSERVATIONS*				
Gerald Persha		USA	2013-2018	11,052
OVER 10,000 DSLR OBSERVATIONS*				
Aniruddh N. Deshpande		India	2013-2018	10,134
OVER 1,000 DSLR OBSERVATIONS*				
Wolfgang Vollmann		Austria	1976-2018	2,475
Erik Wischnewski	02	Germany	2014-2018	2,464
Richard Biernikowicz		Poland	2011-2018	2,427
Nicola Montecchiari	18	Italy	1990-2018	2,289
Ivan Sergey		Belarus	2003-2018	1,262
David L. Blane	10	South Africa	1978-2018	1,095
OVER 500 DSLR OBSERVATIONS*				
Maksym Pyatnytskyy		Ukraine	2017-2018	978
Stephen C. Schiff		USA	1960-2018	834
Søren C. Toft		Switzerland	2016-2018	579

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Observer Awards, cont.

Award/recipient	*Affiliation***	*Country*	*Interval*	*Total*
OVER 100 DSLR OBSERVATIONS*				
Gregory Conrad		USA	2017-2018	499
Ray E. Tomlin		USA	2006-2018	498
Attila Nemes		Hungary	2006-2018	444
Francisco Jablonski		Brazil	2018-2018	391
John A. Pickett		USA	1988-2018	322
Robert K. Buchheim		USA	2005-2018	310
Dietmar Augart	02	Germany	2002-2018	243
Yuri Solomonov		Russia	2017-2018	234
David Mohrbacher		USA	1980-2018	209
Piotr Ligeza		Poland	2018-2018	165
Sampsa Lahtinen	17	Finland	2004-2018	152
Adam Derdzikowski		Poland	2003-2018	150
Bogdan Kubiak		Poland	2009-2018	144
Michael G. Miller		USA	2010-2018	143
Mark G. Blackford	29	Australia	2011-2018	117
David Rodriguez		Spain	2016-2018	114
David J. Benn	34	Australia	2009-2018	112
Christian Riou		France	2012-2018	104

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

A number preceding a name indicates observer is also affiliated with the group below:

01 Association Française des Observateurs d'Étoiles Variables (AFOEV)
02 Bundesdeutsche Arbeitsgemeinschaft für Veränderliche Sterne e.V.(Germany) (BAV)
03 Magyar Csillagászati Egyesület, Változócsillag Szakcsoport (Hungary) (MCSE)
04 Koninklijke Nederlandse Vereniging Voor Weer-en Sterrenkunde, Werkgroep Veranderlijke Sterren (Netherlands) (KNVWS)
05 Vereniging Voor Sterrenkunde, Werkgroep Veranderlijke Sterren (Belgium) (VVS)
10 Astronomical Society of Southern Africa, Variable Star Section (ASSA)
13 Rede de Astronomia Observacional (Brazil) (REA)
15 Agrupacion Astronomica de Sabadell (Spain) (AASABADELL)
17 URSA Astronomical Association, Variable Star Section (Finland) (URSA)
18 Unione Astrofili Italiani (UAI)
19 Svensk Amator Astronomisk Forening, variabelsektionen (SAAF)
20 British Astronomical Association, Variable Star Section (BAA-VSS)
27 Royal Astronomical Society of Canada (RASC)
29 Variable Stars South (VSS)
34 Astronomical Society of South Australia (ASSAU)

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AAVSO Solar Observer Awards (presented at the 107th Annual Meeting in Flagstaff, Arizona, November 17, 2018)

Sunspot Award (100 observations)
Michel Deconinck
Bob Eramia

Sunspot Award (500 observations)
Diego Bastiani
Tadeusz Figiel
David Jackson
Gerardo Jimenez Lopez
Walter Maluf
John O'Neill

Sunspot Award (1,000 observations)
Jorge del Rosario
Juan Antonio Moreno Quesada
George Mudry
Andries Son

Sunspot Award (1,500 observations)
Alexandre Amorim
Jose Carvajal
Enrico Mariani

Sunspot Award (2,000 observations)
Salvador Aguirre
Rodney Howe
Larry Krozel
Dan Vidican

Sunspot Award (2,500 observations)
Javier Alo
Howard Barnes

Sunspot Award (3,500 observations)
Monty Leventhal

Sunspot Award (4,000 observations)
Piotr Urbanski

Sunspot Award (4,500 observations)
Franky Dubois
K. Fujimori
James & Shirley Knight
A. Gonzalo Vargas
William M. Wilson

Sunspot Award (5,000 observations)
Robert Brown
Brian Cudnik
David Teske

Sunspot Award (5,500 observations)
Gema Araujo

Sunspot Award (6,000 observations)
German Morales Chavez

SID Award (40 months of reports)
Salvador Aguirre
Ken Menzies

Appendix 2. Observer Totals

Table 1. AAVSO Observer Totals 2017–2018 by Country.*

Country	No. Observers	No. Obs.	Country	No. Observers	No. Obs.	Country	No. Observers	No. Obs.
Argentina	10	695	France	33	33953	Romania	8	1085
Austria	7	2841	United Kingdom	68	185110	Serbia	1	430
Australia	30	64976	Greece	8	12035	Spain	52	344258
Bangladesh	1	4	Croatia	1	44	Russian Federation	16	1045
Belgium	21	382484	Hungary	33	67478	Sweden	10	8946
Bulgaria	3	1672	Ireland	3	102	Singapore	1	21
Bermuda	1	292	India	6	6017	Slovenia	1	22
Bolivia	1	52	Italy	33	15067	Slovakia	6	2676
Brazil	22	4707	Japan	3	1061	Turkey	2	11
Belarus	3	520	Kazakhstan	1	123	Taiwan	1	179
Canada	42	33136	Luxembourg	1	7	Ukraine	16	16451
Switzerland	6	9752	Latvia	1	8	United States	272	1115069
China	1	1840	Morocco	1	53	Uruguay	1	5
Cyprus	2	16533	Malta	2	34109	Venezuela	1	46
Czech Republic	1	1	Mexico	1	139	South Africa	4	747
Germany	40	26903	Netherlands	7	2391			
Denmark	8	1773	Norway	3	184	Total countries:	56	
Ecuador	1	17	New Zealand	8	16653	Total observers:	846	
Estonia	1	69	Philippines	1	719	Total observations:	2435646	
Spain	52	344258	Poland	26	8547			
Finland	10	10312	Portugal	3	2276			

Table 2. AAVSO Observer Totals 2017–2018 USA by State or Territory.

State	No. Observers	No. Obs.	State	No. Observers	No. Obs.	State	No. Observers	No. Obs.
Alabama	3	87	Maryland	7	2731			
Arizona	17	9770	Massachusetts	10	52306	South Carolina	2	155
Arkansas	4	11618	Michigan	10	6509	Texas	16	14784
California	24	423717	Minnesota	4	3425	Utah	2	8
Colorado	9	4873	Mississippi	1	1606	Vermont	1	1147
Connecticut	5	59	Missouri	5	6436	Virginia	14	3384
Delaware	2	4	Montana	2	32254	Washington	8	496
District of Columbia	1	3034	Nebraska	1	24	West Virginia	2	1461
Florida	9	161993	Nevada	1	1	Wisconsin	5	126216
Georgia	6	2313	New Hampshire	4	2796	unknown	3	905
Hawaii	1	727	New Jersey	3	3452			
Idaho	1	4384	New Mexico	9	58402	Total states:	46	
Illinois	10	63130	New York	11	39686	Total observers:	272	
Indiana	9	21116	North Carolina	6	5666	Total observations:	1115069	
Iowa	2	155	Ohio	13	3714			
Kansas	4	153	Oklahoma	3	418			
Kentucky	1	5252	Oregon	5	27763			
Louisiana	3	61	Pennsylvania	8	1915			
Maine	4	295	Rhode Island	1	4668			

** Totals reflect observations made during fiscal 2017–2018 and do not include historical data (data preceding fiscal 2017–2018) submitted during fiscal 2017–2018.*

Table 3. AAVSO Observers, 2017–2018.*

Code	Org.	Name	No. Obs.	Code	Org.	Name	No. Obs.
AAP		P. Abbott, Canada	55	BJOI		J. Black, New Zealand	6
AAN	02	A. Abe, Germany	48	BRAC		R. Black, Oklahoma	44
APGA	20	P. Abel, United Kingdom	6	BMGA	29	M. Blackford, Australia	558
AGUA		G. Abramson, Argentina	1	BKL		J. Blackwell, New Hampshire	49
APIA	18	P. Aceti, Italy	215	BADB		A. Blake, Arizona	65
ACN	13	C. Adib, Brazil	120	BVZ		J. Blanco Gonzalez, Spain	17
ASA		S. Aguirre, Mexico	139	BLD	10	D. Blane, South Africa	663
ASW	20	S. Albrighton, United Kingdom	899	BWZ		E. Blown, New Zealand	84
AFSA		F. Alfarp, Spain	696	BJAA		J. Boardman, Wisconsin	24029
ACO	20	C. Allen, Sweden	944	BOH	02	D. Boehme, Germany	203
AJV	15	J. Alonso, Spain	504	BSCC		S. Boerner, Missouri	484
AKV		K. Alton, New Jersey	3429	BHQ	29	T. Bohlsen, Australia	482
AAX	36	A. Amorim, Brazil	1924	BRJ		J. Bortle, New York	1802
AADA	12	A. Anunziato, Argentina	2	BMF	27	M. Boschat, Canada	7
AJN	27	J. Appleyard, Canada	11	BDLA		D. Boulet, Delaware	2
ARJ		J. Arnold, Texas	144	BMU	04	R. Bouma, Netherlands	41
ATE		T. Arranz, Spain	218421	BJMC		J. Bourgeois, Belgium	29
APAA	27	P. Ashmore, Canada	111	BDG	20	D. Boyd, United Kingdom	8033
ATDA		T. Atwood, Louisiana	4	BMK		M. Bradbury, Indiana	26
AAUA	32	M. Audejean, France	152	BMAK		M. Bradley, Ohio	14
ADI	02	D. Augart, Germany	189	BRAF		R. Braga, Italy	16
ARX		R. Axelsen, Australia	3	BJFA		J. Brandie, China	1840
ACJB		C. Ayres, Nevada	1	BQC	01	J. Breard, France	7
AMID		M. Aznar Carbo, Spain	193	BTB		T. Bretl, Minnesota	52
BOZ	03	B. Bago, Hungary	1399	BHA	02	H. Bretschneider, Germany	272
BJUB		J. Bagues, Spain	1	BRCM	20	C. Briden, United Kingdom	92
BWY		W. Bailey, Arizona	174	BQE	27	E. Briggs, New York	56
BMAM		M. Bajer, Poland	1	BSM		S. Brincat, Malta	32657
BJMB		J. Baker, Michigan	1	BJFB		J. Briol, Minnesota	3292
BFO	03	J. Bakos, Hungary	3547	BSTA		S. Broadbent, United Kingdom	646
BDAD		D. Bamberger, Germany	63	BLUA		L. Brooks, Virginia	157
BGZ		G. Banialis, Illinois	737	BBM		B. Brown, Washington	2
BTAD		T. Banys, Poland	1	BNK		N. Brown, Australia	1758
BSBB		S. Baranowski, Poland	15	BLQ	20	L. Brundle, United Kingdom	1347
BLOC	18	L. Barbieri, Italy	95	BANG		A. Brunelli, Italy	1173
BMAI		M. Barlazzi, Italy	239	BOA	01	A. Bruno, France	3009
BSR	18	S. Baroni, Italy	42	BJRA		J. Bruton, California	542
BPO		D. Barrett, France	11040	BYQ		T. Bryant, Maryland	74
BARM	20	M. Barrett, United Kingdom	407	BISA	16	I. Bryukhanov, Belarus	13
BSAA		S. Basu (Samindra), India	6	BVIB		V. Buchenko, Ukraine	10
BSAB		S. Basu (Santanu), India	1	BHU		R. Buchheim, Arizona	310
BBA		B. Beaman, Illinois	2926	BNBA		N. Buchholz, Germany	142
BWX	27	A. Beaton, Canada	46	BMSA		M. Bundas, Michigan	1264
BDQ		A. Bedard, Washington	267	BIW	29	N. Butterworth, Australia	648
BANL		A. Belotsky, Russian Federation	75	CALC		A. Cabello Sánchez, Spain	106
BZX		A. Beltran, Bolivia	52	CPU	13	P. Cacella, Brazil	861
PNQ		R. Benavides Palencia, Spain	712	CTOA		T. Calderwood, Oregon	66
BHS		H. Bengtsson, Sweden	266	CFJA		F. Caleya Salamanca, Spain	1
BDJB	34	D. Benn, Australia	118	CCB		C. Calia, Connecticut	7
BTY		T. Benner, Pennsylvania	445	CCZ		C. Calis, Turkey	7
BPAD		P. Benni, Massachusetts	756	CLUB	36	L. Camargo Da Silva, Brazil	6
BEB		R. Berg, Indiana	13	CMN		R. Cameron, Australia	4
BSEC	27	S. Bergeron, Canada	580	CMP		R. Campbell, Florida	1229
BICA	36	I. Bernardes, Brazil	63	CFRA		F. Campos, Spain	488
BYF		H. Betlem, Netherlands	553	CQP		A. Capetillo Blanco, Spain	101
BRIA		R. Biernikowicz, Poland	1312	CKBB		K. Caplikas, Australia	5546
BBI	05	B. Billiaert, Belgium	393	CMAE		M. Cappellini, Italy	51
BCOA		C. Bishop, Virginia	7	CADA	36	A. Cardoso, Brazil	15
BXT	08	T. Bjerkgaard, Norway	182	CJEC		J. Carels, Belgium	2

Table 3. AAVSO Observers, 2017–2018, cont.*

Code	Org.	Name	No. Obs.
CW		W. Carini, New York	2
CLQ		L. Cason, South Carolina	88
CLAC		L. Cassignard, France	25
CJE	01	J. Castellani, France	418
CRAB		R. Castillo, Spain	6
CDZ		D. Cejudo Fernandez, Spain	98128
CIVA		I. Cervini, Switzerland	8404
CJOC		J. Chan, Singapore	21
CNT		D. Chantiles, California	153
CGF		G. Chaple, Massachusetts	25
CGZ	20	G. Chaplin, United Kingdom	1009
CAEA		A. Chapman, Argentina	59
CCY		C. Chiselbrook, Georgia	323
CMF	02	M. Chudy, Germany	271
CMAA		M. Ciocca, Kentucky	5252
CWJA		W. Clark, United Kingdom	20
CWP		W. Clarke, Arizona	1744
CPE		P. Closas, Spain	379
CPP		P. Coker, Colorado	47
CDK		D. Collins, North Carolina	5656
CME	18	E. Colombo, Italy	340
CTIA		T. Colombo, Italy	668
CBY	05	B. Colyn, Belgium	5
CDSA	20	D. Conner, United Kingdom	12883
CGRD		G. Conrad, New Mexico	1760
CEMB	01	E. Conseil, France	14
CGIA		G. Conzo, Italy	563
COO		L. Cook, California	66900
CMJA		M. Cook, Canada	3273
CK		S. Cook, Arizona	1827
CWT		W. Cooney, Texas	1295
COM	10	T. Cooper, South Africa	45
CLZ		L. Corp, France	5016
CMEA		M. Correa, Spain	94
CAI		A. Correia, Portugal	1129
CNQ		N. Costa, Portugal	18
COV		V. Coulehan, New York	32
CDJA		D. Coulter, Idaho	4384
CWD		D. Cowall, Maryland	903
CMY		M. Crook, United Kingdom	15
CDAD		D. Crowson, Missouri	5716
CDVA	03	D. Csillag, Hungary	7
CSM	03	M. Csukas, Romania	360
CKB		B. Cudnik, Texas	3284
CSEB		S. Curry, Oregon	75
CCHD		C. Cynamon, Maryland	284
CSZ	03	S. Cziniel, Hungary	21
DCMA		C. Da Silva, Brazil	122
DMIA		M. Dadighat, California	946
DAH	08	H. Dahle, Norway	1
DPHA		P. Danthine, Belgium	148
DAM		A. Darriba Martinez, Spain	1009
DAJ		J. Davis, Maryland	30
DMA		M. Davis, South Carolina	67
DHEB		H. De Angelis, Sweden	909
DJAD		J. De Elías, Spain	56
DJX	27	M. De Jong, Canada	327
DPP		P. De Ponthiere, Belgium	352
SWQ	13	W. De Souza, Brazil	108
DJEG	05	J. De Wit, Belgium	3
DJEF		J. Dechoz, France	28
DMIB		M. Deconinck, France	487
DDAA		D. Dedrickson, Oregon	18
DLM	01	M. Deldem, France	1015
DJEC		J. Delgado Casal, Spain	9
DFR	27	F. Dempsey, Canada	48
DDE		D. Denisenko, Russian Federation	100
DAT		A. Derdzikowski, Poland	286
DNO		O. Deren, Poland	654
DADA		A. Deshpande (Ameya), India	17
DAND		A. Deshpande (Aniruddh), India	5960
DJED		J. Desrosiers, Canada	948
DPK		P. Detterline, Pennsylvania	4
DEY		J. DeYoung, Virginia	37
DSI		G. Di Scala, Australia	316
JNDB		N. Dias Cavalcante, Brazil	5
DMAC	06	M. Díaz, Spain	43
DPA	05	A. Diepvens, Belgium	39
DIE		S. Dieters, Australia	1
DLA		A. Dill, Kansas	9
DMIC	34	M. Doherty, Australia	31
DXAA	15	X. Domingo Martínez, Spain	2327
DSN		S. Donnell, Colorado	41
DROD		R. Donner, New York	1
DJUA		J. Dos Santos, Argentina	93
DERA		E. Dose, New Mexico	25088
DDJ		D. Dowhos, Canada	214
DRCA	20	R. Dryden, United Kingdom	112
DUBF	05	F. Dubois, Belgium	5956
DPV		P. Dubovsky, Slovakia	1607
DROB	27	R. Dudley, Ohio	5
DFS	05	S. Dufoer, Belgium	21595
DMO	01	M. Dumont, France	731
DMPA		M. Durkin, New York	34
DKS		S. Dvorak, Florida	144259
DJAE		J. Dygos, Poland	33
ELIA		L. Eager, Florida	3
ELYA		L. Easley, Texas	131
ETOA		T. Eenmae, Estonia	69
EHEA		H. Eggenstein, Germany	4092
EMA		M. Eichenberger, Switzerland	6
EELA		E. Ejarque Gonzalez, Spain	2
EWRA		W. Elias, Argentina	1
EDAB	27	D. English, Canada	1173
EPIA		P. Ercoli, Italy	55
EEY		E. Erdelyi, California	455
ERW	14	R. Evans, New Zealand	44
FRGA		R. Farfán, Spain	1857
FFAD		F. Feijo, Brazil	217
FJCB	36	J. Fernandes Neto, Brazil	19
FPAA		P. Fernandez Blanco, Spain	6
FRF	03	R. Fidrich, Hungary	3
FMAE		M. Figuła, Poland	206
FMAC		M. Filipek, Poland	38
FGP	20	G. Fleming, United Kingdom	405
FDA	03	A. Fodor, Hungary	131
FBZ	03	B. Fodor, Hungary	42
FTMA		T. Foote, North Carolina	2

Table 3. AAVSO Observers, 2017–2018, cont.*

Code	Org.	Name	No. Obs.
FJQ		J. Foster, California	993
FRL		R. Fournier, Ohio	245
FDU		D. Fowler, Ohio	16
FXJ		J. Fox, New Mexico	165
FALD		A. Free, Washington	4
FTKB		T. Friedli, Switzerland	18
FMG		G. Fugman, Nebraska	24
FFAB	13	F. Fujiwara, Brazil	18
FRTA		R. Fuller, Texas	10
FSRA		S. Futcher, United Kingdom	369
GSTB		S. Gagnon, Virginia	6
GMQA	20	M. Gainsford, United Kingdom	422
GCHB		C. Galdies, Malta	1452
GFDB	06	F. Garcia, Spain	181
GAA		P. Garey, Illinois	69
GJP		J. Garlitz, Oregon	61
GALB		A. Garofide, Romania	153
GVQ	20	D. Gavine, United Kingdom	194
GKI		K. Geary, Ireland	11
GMD		M. Geldorp, Canada	2
GVAA		V. Generalov, Russian Federation	5
GDRA		D. Gentry, North Carolina	2
GQR		R. Gherase, Romania	18
GMAD		M. Gibaja, Spain	6
GGU	04	G. Gilein, Netherlands	747
GSEB		S. Girard, Oklahoma	53
GRIB		R. Glassner, Missouri	31
GATH		A. Glazier, Ireland	4
GZN		A. Glez-Herrera, Spain	4051
GLG		G. Gliba, Maryland	130
GFB	31	W. Goff, California	2197
GPX		W. Goltz, Australia	36
GTIA		T. Gong, New Jersey	19
GFDA	27	F. Gonzalez, Canada	1
GCJ		J. González Carballo, Spain	328
GDJA		D. Gorney, Arizona	4
GGC		G. Gotta, Italy	1
GJED		J. Gout, Mississippi	1606
GMIB		M. Govedič, Slovenia	22
GKA		K. Graham, Illinois	1947
GPE		.. Grainger Observatory, New Hampshire	3
GLAA	01	L. Granier, France	940
GRL	08	B. Granslo, Norway	1
GANG		A. Gregory, Minnesota	64
GFS	20	K. Griffiths, United Kingdom	118
GALD	03	A. Grosz, Hungary	18
GCO		C. Gualdoni, Italy	1267
GFRB		F. Guenther, Maryland	56
GARB		A. Gutcher, United Kingdom	2
GGX	01	G. Guzman, France	169
HCS	03	C. Hadhazi, Hungary	2332
HDH	03	S. Hadhazi, Hungary	333
HTY		T. Hager, Connecticut	1
HIVB		I. Hajdinjak, Croatia	44
HKB		B. Hakes, Illinois	152
HJW		J. Hall, Colorado	2419
HMB	05	F. Hambsch, Belgium	218130
HHAB	02	H. Hammerl, Germany	55
HPL		P. Hansen, Denmark	3
HBB		B. Harris, Florida	16141
HMQ		M. Harris, Georgia	12
HWB	20	W. Harris, United Kingdom	18
HHU	05	H. Hautecler, Belgium	1
HAB		R. Hays, Illinois	491
HMH		M. Heald, New Mexico	235
HKIC		K. Heneault, Georgia	5
HMV		M. Hessom, California	35
HNDA		N. Hewitt, United Kingdom	13
HXT	20	T. Heywood, United Kingdom	6514
HKEB		K. Hills, United Kingdom	4520
HDHA		D. Hinzel, Virginia	269
HDF		D. Hohman, New York	112
HGP	20	G. Holahan, Pennsylvania	3
HGUA	19	G. Holmberg, Sweden	1158
HKAB	19	K. Holmquist, Sweden	239
HOO	04	G. Hoogeveen, Netherlands	174
HJG		J. Horne, California	29
HMID		H. Mir Sakhawat, Bangladesh	4
HMIA		M. Hotka, Colorado	174
HSP	14	S. Hovell, New Zealand	4445
HRBA		R. Howard, California	297
HOA		A. Howell, Florida	4
HMAF		M. Hrivnák, Slovakia	85
HJA		J. Hudson, California	24
HGAC		G. Huffman, Alabama	1
HKD	20	R. Hunt, United Kingdom	418
HUR	20	G. Hurst, United Kingdom	1395
HUZ		R. Huziak, Canada	54
ILUA		L. Izzo, Italy	6
JFRA		F. Jablonski, Brazil	391
JPHA		P. Jackman, Iowa	3
JJB	11	J. Jacobsen, Denmark	2
JMA		M. Jacquesson, France	80
JTP	01	P. Jacquet, France	469
JDAA		D. Jakubek, Poland	1617
JM		R. James, New Mexico	19234
JMAA		M. Jansson, Sweden	8
JDAD		D. Janzen, Canada	10
JDAB		D. Jarkins, Missouri	52
JRBA	34	R. Jenkins, Australia	2443
JSI		S. Jenner, United Kingdom	4
JGE	06	G. Jiménez López, Spain	51
JSJA	20	S. Johnston, United Kingdom	1174
JJI		J. Jones, Oregon	27543
JMAB		M. Jones, Indiana	46
JPG		P. Jordanov, Bulgaria	202
JJNA		J. Jose, Spain	2
JGRB		G. Joshi, India	16
JML	20	M. Joslin, United Kingdom	255
JLZ	03	L. Juhasz, Hungary	490
KMY		M. Kaczmarech, Brazil	1
KPK		P. Kalajian, Maine	20
KB		W. Kaminski, New Mexico	48
KAM	02	A. Kammerer, Germany	2
KLAA		L. Kannard, Louisiana	2
KTU		T. Kantola, Finland	4308
KMO		M. Kardasis, Greece	5219
KSF		S. Karge, Germany	29

Table 3. AAVSO Observers, 2017–2018, cont.*

Code	Org.	Name	No. Obs.	Code	Org.	Name	No. Obs.
KBJB	19	B. Karlsson, Sweden	809	LMA	27	D. Lemay, Canada	11043
KTHA	19	T. Karlsson, Sweden	2418	LVY		D. Levy, Arizona	73
KAD	03	A. Karpati, Hungary	724	LPAC		P. Lewin, California	16814
KEI		E. Kato, Australia	153	LPIB		P. Ligeza, Poland	170
KBJ		R. Kaufman, Australia	34	LFEA		F. Limón Martínez, Spain	41
KMQ	06	M. Kearns, Spain	3	LPEB	02	P. Lindner, Germany	249
KGAB		G. Kellerman, USA	806	LMK		M. Linnolt, Hawaii	727
KHEA		H. Kerner, Germany	7	LCHF		C. Liponis, Greece	31
KSH	29	S. Kerr, Australia	10	LLEA		L. Liponis, Greece	15
KCSB	03	C. Kertesz, Finland	1852	LCO		C. Littlefield, Indiana	11500
KSZ	03	S. Keszthelyi, Hungary	345	LGIB	18	G. Locatelli, Italy	237
KMR	20	M. Kidger, United Kingdom	381	LGV		G. Lopatynski, California	69
KHAB	17	H. Kiiskinen, Finland	50	LOCA		O. Lopez, Venezuela	46
KTHC	20	T. Killestein, United Kingdom	55	LVAC		A. Lopez Villanueva, France	8
KRAA		R. King, Virginia	47	LCLC	18	C. Lopresti, Italy	1515
KJSC		J. Kirkland, Utah	7	LRAB		R. Loslo, Indiana	200
KKJ	03	K. Klajnik, Hungary	4	LMTA		M. Lott, Georgia	1
KKAA		K. Klindt-Jensen, Denmark	563	LDS	20	D. Loughney, United Kingdom	137
KRAB		R. Kneip, Luxembourg	7	LDAB		D. Louw, South Africa	19
KPL		P. Kneipp, Louisiana	55	LFEB	03	F. Lovró, Hungary	17
KCD	20	C. Knight, New Zealand	448	LSJB	14	S. Lowther, New Zealand	2261
KGT		G. Knight, Maine	18	LBG		G. Lubcke, Wisconsin	2464
KSP		S. Knight, Maine	220	LLIA		L. Lucas, North Carolina	2
KOC	03	A. Kocsis, Hungary	242	LPAE		P. Luckas, Australia	54
KLO		L. Kocsmaros, Serbia	430	LCHD		C. Lugova, Ukraine	535
KHL		M. Kohl, Switzerland	1109	LFSA		F. Luiz, Brazil	1
KTAA	03	T. Komaromi, Hungary	5	MDW		W. MacDonald, Canada	831
KMA		M. Komorous, Canada	1556	MRGA		R. MacPhail, Canada	80
KALD		A. Konahins, Latvia	8	MZOA	03	Z. Magyarics, Austria	154
KSLA		S. Koontz, Texas	419	MQA		A. Maidik, Ukraine	3158
KOS	03	A. Kosa-Kiss, Romania	474	MDIC		D. Maitra, Massachusetts	10
KCLA		C. Kotnik, Colorado	1623	MII	03	L. Majzik, Hungary	1
KAF	03	A. Kovacs, Slovakia	442	MEGA		E. Maleev, Ukraine	670
KYUB		Y. Kozlow, Ukraine	187	MJHN	20	J. Mallett, United Kingdom	2157
KFK		F. Krafka, Texas	2	MCPA		C. Maloney, Arkansas	1878
KJOA		J. Kribbel, Austria	88	MAND		A. Mantero, Italy	53
KWO	02	W. Kriebel, Germany	359	MXI	18	A. Marchini, Italy	511
KEVA	16	E. Krotkov, Russian Federation	19	MJOE		J. Marco, Spain	424
KNAA		N. Krumm, California	643	MFB	18	F. Mariuzza, Italy	1
KROB	02	R. Kubala, Germany	1	MXS	03	S. Marosi, Hungary	21
KBA		B. Kubiak, Poland	584	MMN	18	M. Martignoni, Italy	104
KUC	01	S. Kuchto, France	1980	MJOD		J. Martin, Spain	1
KYUA		Y. Kunitsa, Ukraine	288	MSAC	27	S. Mastellotto, Canada	1
KSQ		S. Kuznetsov, Russian Federation	29	MREN	18	R. Matera, Italy	1
KWD		C. Kwadrat, Virginia	4	MISB	03	I. Mátis, Romania	57
KMIC		M. Kwieciak, Poland	69	MAV		D. Matsnev, Russian Federation	101
LCR	15	C. Labordena, Spain	855	MTH		H. Matsuyama, Japan	832
LHS		H. Lacombe, Canada	16	MDMS	20	D. Matthews, United Kingdom	207
LSA	17	S. Lahtinen, Finland	104	MERA		E. Matys, Austria	5
LYAC		Y. Lairgi, Morocco	53	MPR		P. Maurer, Germany	206
LPAB		P. Lampens-Vancauteren, Belgium	33	MZR		J. Mazur, Connecticut	36
LDJ	27	D. Lane, Canada	1339	MCOA		C. McCann, Arkansas	86
LTO	02	T. Lange, Germany	20	MTAB		T. McClain, Kansas	1
LRCA		R. Larochelle, Canada	5	MDP	27	P. McDonald, Canada	1861
LKR		K. Larsen, Connecticut	14	MCOB		C. McKenzie, Canada	18
LZT		T. Lazuka, Illinois	788	MJB		J. McMath, Arkansas	9290
LJW	01	J. Lechopier, France	11	MMAE		M. McNeely, Indiana	10
LMT		M. Legutko, Poland	155	MPJM	20	P. Meadows, United Kingdom	2
LPD	01	P. Lemarchand, France	3	MSD		D. Means, Arizona	9

Table 3. AAVSO Observers, 2017–2018, cont.*

Code	Org.	Name	No. Obs.
MTOD		T. Medulka, Slovakia	8
MED		K. Medway, United Kingdom	2677
MIQ	20	I. Megson, United Kingdom	185
MYAA		Y. Melnikov, Austria	45
MQG		M. Menegotto, Argentina	45
MZK		K. Menzies, Massachusetts	40054
MBEA		B. Merand, France	63
MJAL		J. Merc, Czech Republic	1
MDEN		D. Merrill, California	5
MHL		E. Michaels, Texas	4851
MMII		M. Miciukiewicz, Connecticut	1
MVH		V. Mihai, Romania	16
MIW	20	I. Miller, United Kingdom	18642
MMGA		M. Miller, Texas	64
MMEA		M. Millward, Australia	409
MNIC		N. Mishevskiy, Ukraine	7772
MOBM	20	M. Mobberley, United Kingdom	106
MRV		R. Modic, Ohio	17
MHH		J. Moehlmann, Pennsylvania	627
MOD		D. Mohrbacher, Ohio	209
MPV	03	P. Molnar, Hungary	2
MVLA	16	V. Monakhov, Russian Federation	8
MISA		I. Monks, United Kingdom	137
MMAO		M. Morales Aimar, Spain	4729
MAEA		A. Morozov, Russian Federation	19
MOW		W. Morrison, Canada	5090
MRZA		R. Moseley, Massachusetts	3
MPS	27	P. Mozel, Canada	47
MKCA		K. Mrazek, Austria	5
MMH		M. Muciek, Poland	571
MACC		A. Muethel, Michigan	3
MULP	20	P. Mulligan, United Kingdom	292
MMU		M. Munkacsy, Rhode Island	4668
MGAB		G. Murawski, Poland	2240
MUY	05	E. Muyllaert, Belgium	11254
MGW		G. Myers, California	113140
NDQ	01	D. Naillon, France	32
NATA		A. Narita, Japan	12
NSIA		S. Nasiewicz, Belarus	8
NRNA		R. Naves, Spain	629
NRRB		R. Neibaur, North Carolina	2
NLX		P. Nelson, Australia	14845
NTHC		T. Nelson, Pennsylvania	41
NAL		A. Nemes, Hungary	421
NJO	02	J. Neumann, Germany	2703
NMI		M. Nicholas, Arizona	2142
NOT	02	O. Nickel, Germany	1952
NMT	17	M. Nissinen, Finland	130
NOMA		O. Noroozi, Michigan	396
NCH		C. Norris, Texas	61
NAO		A. Novichonok, Russian Federation	65
OCN		S. O'Connor, Bermuda	292
OBRA		B. O'Keeffe, GA	3
ODEA		D. O'Keeffe, Ireland	87
ONJ		J. O'Neill, Massachusetts	798
OJEA		J. Oaster, Pennsylvania	319
OAS		A. Odasso, Italy	1
OELA		E. Odintsova, Ukraine	180
OYE		Y. Ogmen, Cyprus	16529
OJMA	17	J. Ojanpera, Finland	47
OAR	17	A. Oksanen, Finland	3558
OPR		P. Ossowski, Poland	27
OSE		S. Otero, Argentina	28
OJJ		J. Ott, Colorado	416
OCR	05	C. Otten, Belgium	408
PLA		A. Padilla Filho, Brazil	556
PSD		S. Padovan, Spain	937
PTFA		T. Papadimitriou, Greece	1758
PMAJ		M. Papapoulias, Greece	1
PCC	18	R. Papini, Italy	1
PPS	03	S. Papp, Hungary	1999
PSW	20	W. Parkes, United Kingdom	100
PFRA		F. Parks, California	114
PST		S. Parsons, Florida	1
PNIA		N. Paschalis, Greece	548
PJJ	15	J. Pastor, Spain	49
PJRB		J. Pater, United Kingdom	40
PTT	20	R. Paterson, United Kingdom	637
PGNA		G. Pawar, India	17
PEX		A. Pearce, Australia	15731
PRCA		R. Pearce, United Kingdom	618
PMAN		M. Peavy, California	1
PEI	11	E. Pedersen, Denmark	1075
PVTA	11	V. Pedersen, Denmark	17
PEG	01	C. Peguet, France	1766
PWD		W. Pellerin, Texas	238
PEJA		E. Pellett, Wisconsin	1293
PPRA		P. Pendergraft, Alabama	76
PJED		J. Penninckx, France	315
PSCA		S. Percy, United Kingdom	210
PRVA		R. Pereira, Brazil	14
PVLA		V. Perekhrest, Ukraine	23
PCX	15	C. Perello, Spain	7
PLFA		L. Perez, Spain	134
PEJ	01	J. Perrard, France	85
PMAM		M. Perry, California	30
PGD		G. Persha, Michigan	1889
PLMA		L. Peñas, Spain	3
PJOG		J. Philpott, Utah	1
PTEB		T. Phong, Australia	264
PXR	20	R. Pickard, United Kingdom	15922
PKT		J. Pickett, Arizona	364
PROC		R. Pieri, France	216
PUWA		U. Pilz, Germany	16
PRUA		R. Pinizzotto, Maine	37
PJEF		J. Pioppa, France	364
PIJ	03	J. Piriti, Hungary	337
PMAA		M. Pirtac, Romania	6
PMAF		M. Pittendreigh, Florida	4
PWMA		W. Pittendreigh, Florida	166
PPL		P. Plante, Ohio	132
PAW	29	A. Plummer, Australia	2817
AST	12	R. Podesta, Argentina	30
PTOB		T. Polakis, Arizona	2902
PVEA		V. Popov, Bulgaria	1469
PJOF		J. Poppele, Minnesota	17
PJTA	17	J. Porio, Finland	8
PWR		R. Powaski, Ohio	2

Table 3. AAVSO Observers, 2017–2018, cont.*

Code	Org.	Name	No. Obs.
POX		M. Poxon, United Kingdom	1024
PYG	20	G. Poyner, United Kingdom	10635
PEMB		E. Primucci, Argentina	431
PGB		G. Profita, Italy	8
PALA		A. Prokofyev, Cyprus	4
PMB		M. Prokosch, Texas	3
PDQ	01	D. Proust, France	97
PJUA		J. Provencal, Delaware	2
PUJ	06	F. Pujol-Clapes, Spain	665
PARA		A. Purroy, Spain	30
PHG		H. Purucker, Germany	2
PALE		A. Purves, Maryland	1254
PMAK		M. Pyatnytskyy, Ukraine	1577
QULA	18	U. Quadri, Italy	6850
QCHA		C. Quesada, Arizona	2
RKE	02	K. Raetz, Germany	541
RJOC		J. Rallo, Spain	42
RBK		B. Ramotowski, New Mexico	69
RGAB		G. Ramsay, United Kingdom	1
RMAF		M. Rana, Virginia	559
RACA		A. Ranger, Canada	9
RRUB		R. Rasmussen, Denmark	4
RRIB	27	R. Rast, Canada	4
RMN		M. Ratcliffe, Kansas	3
RJEA		J. Rayon, France	2
RWSA	29	W. Rea, New Zealand	1167
REP	24	P. Reinhard, Austria	296
RFP	13	P. Reis Fernandes, Brazil	181
RJG		J. Ribeiro, Portugal	1129
RIX	29	T. Richards, Australia	560
RHM		M. Richmond, New York	33302
RCCA		C. Riou, France	89
OJR		J. Ripero Osorio, Spain	3713
RIZ		J. Ritzel, New York	4160
RNDA		N. Rivard, Canada	345
RJJC		J. Rivet, Texas	58
RRIA		R. Roberts, Virginia	687
RJWA		J. Robertson, Arkansas	364
RPT		P. Rochford, Alabama	10
RJWB		J. Rock, United Kingdom	29297
RAEA		A. Rodda, United Kingdom	314
RBRB		B. Rodgers, Canada	36
RHE	26	H. Rodriguez, Uruguay	5
RZD		D. Rodriguez Perez, Spain	318
RDAE		D. Rodriguez Vides, Spain	55
RJAD		J. Rodríguez, Spain	5
RANC		A. Roerig, Germany	1
RRO		R. Rogge, Germany	1
RES		E. Romas, Russian Federation	218
RACB		A. Rose, Ohio	1
RRIC		R. Rosener, Arizona	6
ROG		G. Ross, Michigan	147
RGN		G. Rossi, Italy	252
RJV		J. Ruiz Fernandez, Spain	990
RMTB		M. Russell, Colorado	130
RUJ		J. Ruthroff, Indiana	1072
RRR		R. Rynearson, Michigan	32
RZM		M. Rzepka, Poland	2
SRIC		R. Sabo, Montana	32253
SIRC		I. Sagaybins'ka, Ukraine	209
SSU		S. Sakuma, Japan	217
SFV	18	F. Salvaggio, Italy	61
SBAH		B. Salwiczek, Poland	314
SAH		G. Samolyk, Wisconsin	95528
DSS	06	A. San Segundo Delgado, Spain	2
SFGA		F. Sanchez Urquijo, Ecuador	17
SSIM		S. Santini, Italy	79
SGE	27	G. Sarty, Canada	3
SJOG		J. Saunders, New York	4
SEDB		E. Sawyer, Canada	503
SMAI		M. Sblewski, Germany	245
SDAV		D. Scanlan, United Kingdom	411
SFS		S. Schiff, Virginia	719
SRBR		R. Schippers, Netherlands	336
SPK	01	P. Schmeer, Germany	7
SHV	03	A. Schmidt, Hungary	17
SREB		R. Schmidt, District of Columbia	3034
SRAB	02	R. Schoenfeld, Germany	168
SFRA		F. Schorr, Georgia	1969
SYU	02	M. Schubert, Germany	1334
SBEA	02	B. Schwarz, Germany	366
SDM		E. Schwendeman, Virginia	818
SJEA	01	J. Sciolla, France	376
SJTS	20	J. Screech, United Kingdom	42477
SJIA		J. Seargeant, New Mexico	11717
SHUA		H. Sears, Ohio	613
SJPA		J. Seitz, Michigan	2099
SSAB		S. Sementsov, Russian Federation	3
SASC		A. Semenyuta, Kazakhstan	123
SJOI		J. Semeyn, USA	96
SIV		I. Sergey, Belarus	499
SFL		F. Sevilla Lobato, Spain	795
SSTA	27	S. Shadick, Canada	262
SSHA		S. Shaffer, Ohio	2407
SJDA	20	J. Shanklin, United Kingdom	473
SHS		S. Sharpe, Canada	2691
SQN		L. Shaw, California	14
SFY	20	J. Shears, United Kingdom	4466
SVLA		V. Shlyonskov, Russian Federation	5
SLH		L. Shotter, Pennsylvania	460
SGQ		C. Sigismondi, Italy	86
SPAO	18	P. Siliprandi, Italy	460
SCMA		C. Silva, Argentina	5
SBN	13	A. Silva Barros, Brazil	7
SGEO		G. Silvis, Massachusetts	1712
SNE		N. Simmons, Wisconsin	2902
SMLA		M. Simonson, Washington	37
SANG		A. Sing, Philippines	719
SGOR		G. Sjöberg, Massachusetts	5946
SAJD		A. Skoczypiec, Poland	11
SDN		D. Slauson, Iowa	152
SDAB		D. Smales, United Kingdom	219
STAC		T. Smela, Poland	97
SDWA	20	D. Smith, United Kingdom	2336
SDZ		D. Smith, Arizona	10
SHA		H. Smith, Michigan	541
SVIC		V. Smolianchuk, Ukraine	23
SKMA		K. Sniegocki, Poland	2

Table 3. AAVSO Observers, 2017–2018, cont.*

Code	Org.	Name	No. Obs.
SLUA		L. Socha, Poland	139
SROD		R. Solomon, Australia	625
SYRA		Y. Solomonov, Russian Federation	164
STFB		T. Sonnenberg, New Jersey	4
SOI		M. Soukup, New Mexico	86
STYA		T. Sove, Canada	23
SIQ		M. Spearman, Texas	15
SPGA		P. Spital, United Kingdom	7
SXR	03	M. Sragner, Hungary	7
SBL		B. Staels, Belgium	2261
SVAE		V. Stanimirov, Bulgaria	1
SDB		D. Starkey, Indiana	8247
SPET		P. Starr, Australia	10083
SABB		A. Steenkamp, Denmark	104
SNIB		N. Steinkohl, Germany	1
SET		C. Stephan, West Virginia	142
SCEA		C. Stewart, Washington	161
SCMB		C. Stinson, Virginia	1
SOX		C. Stockdale, Australia	678
SGEA		G. Stone, California	220230
SMIF		M. Stone, Missouri	153
SDI	20	D. Storey, United Kingdom	82
SIAK		I. Strikis, Greece	3457
SHZ	02	H. Struever, Germany	27
SRX	14	R. Stubbings, Australia	22
SAC	02	A. Sturm, Germany	858
SUS	02	D. Suessmann, Germany	685
SPP		P. Sullivan, California	79
SJAR		J. Suomela, Finland	177
SB		R. Swanberg, Montana	1
SWV		D. Swann, Texas	403
STDA		T. Syers, United Kingdom	2
SZX	03	Z. Szalma, Hungary	48
SAO	03	A. Szauer, Hungary	118
SLY	03	L. Szegedi, Hungary	119
TFUA		F. Tabacco, Italy	50
TUO		U. Tagliaferri, Italy	59
TMAA		M. Talero, Spain	56
TCGA	20	C. Taylor, United Kingdom	27
TDB	27	D. Taylor, Canada	180
TSUB		S. Taylor, Colorado	16
TLMA		L. Teixeira, Brazil	11
TPS	03	I. Tepliczky, Hungary	1230
TDN		D. Terpstra, Arizona	132
TTU		T. Tezel, Turkey	4
TJP	20	J. Thorpe, Australia	68
TJD		J. Thrush, Michigan	137
TIA	03	A. Timar, Hungary	260
TSCB		S. Toft, Switzerland	78
TRE		R. Tomlin, Illinois	6453
TNIA		N. Tonkin, United Kingdom	215
TOO	20	J. Toone, United Kingdom	6458
TST		S. Toothman, Ohio	33
TRT	03	T. Tordai, Hungary	53026
TVT		V. Tramazzo, Arizona	4
TRF		C. Trefzger, Switzerland	137
TRH	20	R. Tremblay, Canada	124
TDW		D. Trowbridge, Washington	14
TYGA		Y. Tsao, Taiwan	179
TVAB		V. Tsehmeystrenko, Ukraine	741
TANB		A. Tsvetkov, Russian Federation	2
TYEA		Y. Tsvetkova, Ukraine	179
TGOB		G. Tucker, California	2
TGR	27	G. Tulloch, Canada	84
TADA		A. Tużnik, Poland	1
TYS		R. Tyson, New York	181
TSAA		S. Tzikas, Virginia	68
UAN	03	A. Uhrin, Hungary	208
UJHA		J. Ulowetz, Illinois	48619
UIS01		.. Barber Obs. U. Illinois, Illinois	948
UMAA		M. Urbanik, Slovakia	518
VLN	01	L. Vadrot, France	1
VSEA		S. Vakulenko, Ukraine	15
VRUC		R. Valcu, Romania	1
SROF		R. Valdomiro Silva, Brazil	65
VTY	20	T. Vale, United Kingdom	818
VADA		A. Valvasori, Italy	7
BVE	04	E. Van Ballegoij, Netherlands	130
VBRB		B. Van Deventer, Washington	6
VDE	04	E. Van Dijk, Germany	111
VWS	05	J. Van Wassenhove, Belgium	3736
VBH	05	H. Vandenbruaene, Belgium	3
VMAE	05	M. Vanleenhove, Belgium	1203
VMT	05	T. Vanmunster, Belgium	116926
VSD	05	D. Vansteelant, Belgium	7
VANA		A. Vasilev, Ukraine	884
VED	01	P. Vedrenne, France	4945
VRG		R. Venne, Canada	10
VBPA		B. Vietje, Vermont	1147
VII	03	I. Vincze, Hungary	4
VGK		G. Vithoulkas, Greece	1006
VFK	02	F. Vohla, Germany	9777
VOL		W. Vollmann, Austria	2248
VMAG		M. Vrastak, Slovakia	16
WEO		E. Waagen, Massachusetts	2
WWRA		W. Waddell, North Carolina	2
WCR	27	R. Wagner, Canada	115
WGR		G. Walker, New Hampshire	2671
WIV	20	I. Walton, United Kingdom	121
WGAB		G. Wandless, Virginia	5
WJOB	19	J. Warell, Sweden	3
WAU		A. Wargin, Poland	1
WTIB		T. Weber, Colorado	7
WPT		P. Wedepohl, South Africa	20
WRCA		R. Weir, New Hampshire	73
WWC		W. Weiss, Arizona	2
WLIA		L. Wentzel, USA	3
WKL	02	K. Wenzel, Germany	914
WROC		R. Werder, Germany	235
WJAA		J. Whinfrey, United Kingdom	261
WNIB	20	N. White, United Kingdom	26
WBOA		B. Wichert, Germany	287
WNEA	20	N. Wickens, United Kingdom	72
WWK		K. Wierzchos, Florida	186
WTHB	19	T. Wikander, Sweden	2192
WEY		E. Wiley, Texas	3806
WTEB		T. Willamo, Finland	78
WIG		G. Williams, Ohio	20

Table 3. AAVSO Observers, 2017–2018, cont.*

Code	Org.	Name	No. Obs.	Code	Org.	Name	No. Obs.
WPX	29	P. Williams, Australia	6601	ZGEA		G. Zhao, California	5
WSN		T. Wilson, West Virginia	1319	ZANA		A. Zhornichenko, Russian Federation	1
WERB	02	E. Wischnewski, Germany	458	ZUD		D. Zubenel, Kansas	140
WKM		M. Wiskirken, Washington	5				
WPB	20	P. Withers, United Kingdom	1573				
WGl	02	G. Wollenhaupt, Germany	6				
WTOC		T. Wroclawski, Poland	1				
WUB	04	E. Wubbena, Netherlands	410				
WCG		C. Wyatt, Australia	78				
YIGA		I. Yatsenkov, Russian Federation	231				
YBA		B. Young, Oklahoma	321				
YCRA		C. Young, New Zealand	8198				
YDV		D. Young, Massachusetts	3000				
YON		R. Young, Pennsylvania	16				
ZMOA		M. Zachariasen, Denmark	5				
ZALB	37	A. Zanardo, Brazil	2				
ZPA		P. Zeller, Indiana	2				

** Totals reflect observations made during fiscal 2017–2018 and do not include historical data (data preceding fiscal 2017–2018) submitted during fiscal 2017–2018.*

These codes, which appear in the Table (AAVSO Observers 2017–2018), 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)
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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; helping to keep the *Variable Star Index* up to date and functional, and submissions vetted; 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.

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Observing Manuals

AAVSO Solar Observing Guide - Version 1.1

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Photoelectric Photometry Observer's Guide
French - Bernard Candela

A Practical Guide to Exoplanet Observing
French - Jean-Bruno Desrosiers, Serge Bergeron, and Manon Bouchard

Solar Observing Guide
French - Bernard Candela
German - Ilka Petermann
Italian - Raffaello Braga
Portuguese - Alexandre Amorim
Spanish - Sebastián Otero

Variables: What are they and why observe them?
Uzbek - Sherali Niyazova

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