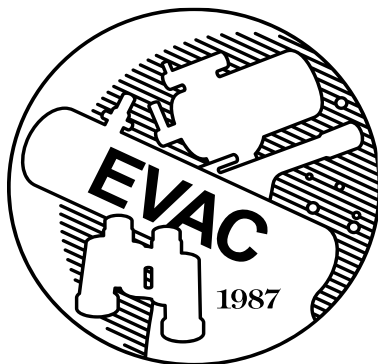


# THE OBSERVER

VOLUME 37 ISSUE 5



M13: Globular Cluster in Hercules  
Sid Leach/Adam Block - Mount Lemon Sky Center

## From the Desk of the President by Claude Haynes

Time flies: whether you are having fun or not – and we are having fun. EVAC was represented at a recent Sunday Diamondbacks game in their STEM Dugout. We had fun discussing different telescope types, the phases of the Moon and viewing meteorites. We also celebrated Astronomy Day with solar viewing at the observatory. Our events calendar is winding down with later sunset times and the end of the school year, but we certainly appreciate all the volunteers who covered so many school and community events. We especially recognize Brooks Scofield, Steve Bradshaw, David Parriott, Josh Eyre, Don Wrigley and Wayne Thomas for

consistently answering the call to share their telescopes and knowledge.

Our next general meeting on May 19 will provide an opportunity for spring cleaning. The member Swap Meet begins at 7:00pm. Bring your eyepieces, filter, excess telescopes and accessories to burden others with our obsessive-compulsive addiction to all things astronomical. The meeting starts at 7:45 and our speaker will be Dr. Steven Neil Shore, who will be addressing us from Pisa, Italy, where he is currently a guest lecturer. ZOOM is a wonderful way to reach out past our own neighborhood. Hopefully

## UPCOMING EVENTS:

*EVAC Public Star Party - May 12th*  
*EVAC Meeting - May 19th*

*Check out all of the upcoming club events in the Calendar on Page 10.*

## INSIDE THIS ISSUE:

<i>From the Desk of the President</i>	1
<i>April 21st 2023 Meeting Minutes</i>	2
<i>What's Up - May 2023</i>	3
<i>Member Swap Meet</i>	3
<i>EVAC Outreach Events</i>	3
<i>Here Come the Globulars!</i>	4
<i>Deep Sky Imaging Target Highlights for May</i>	5
<i>Announcements</i>	7
<i>Classified Ads</i>	8
<i>Calendar</i>	10
<i>Membership Form</i>	11

# From the Desk of the President

by Claude Haynes

*Continued from page 1*

we will have better luck with the technology than we had at our April meeting. Apologies for the delayed start and audio issues with the presentation. Fr. Chris Corbally gave a great presentation on automating spectral analysis of stars.

If the Swap Meet isn't enough of a chance to score some used equipment deals, EVAC has a new option for purchasing donated equipment or renting a telescope. James Yoder, our property manager, has created a website for these transactions and you can find links at the bottom of the EVAC website to take you to the pages. Some of the items may need a little TLC, but many of you

have experience with that. Check it out and let us know what you think.

Finally, have fun and get away from the heat at the Grand Canyon Star Party June 10 – 17. The event is sponsored by the Tucson Amateur Astronomy Association and you can sign up on their website at: [GCSP South Rim Page](#).

Keep looking up and having fun.

Your President  
Claude Haynes

## EVAC ZOOM Meeting Minutes for April 21st, 2023 at 07:30 P.M. AZ Time

by James Yoder

### **Welcome**

EVAC president Claude welcomed club members to the meeting and reviewed the agenda. New visitors were recognized and welcomed. Introduction of Officers and Board for 2023:

- President – Claude Haynes
- Vice President – Woody Sims
- Secretary – James Yoder
- Treasurer – Brooks Scofield
- Board Members: Don Wrigley, Tom Mozdzen, Steve Bradshaw, Alex Beck, David Coshow
- Property Manager: James Yoder
- Webmaster/Newsletter Editor: Marty Pieczonka
- Events Coordinator – (Position is Open)

is \$25 for the first week and \$20 for each successive week. EVAC also has [Used Equipment](#) for sale. The equipment is sold "as-is" and is pick-up only.

- Swap Meet - The May Meeting will have a Swap Meet before meeting starting at 7:00pm going to 7:45 pm.
- Events Coordinator: We are still looking for an events coordinator, if you are interested please contact Claude ([president@evaonline.org](mailto:president@evaonline.org)).
- Membership Renewal: Reminder that it is time for members to review their annual membership.

### **Main Presentation: ML and More in Stellar Spectra Classification**

Presenter: Father/Doctor Chris Corbally

Father Corbally described how the spectra of stars are classified and gave examples of a number of spectra for various types of stars. He also said that historically, spectra were manually classified but now we need to automate the process because many advanced telescopes have the capability of measuring thousands of stars at the same time. He then went on to talk about the MKCLASS application which was developed to perform this classification. Spectra associated with LAMOST – Kepler Spectra and some other Interesting stars were presented and discussed. Finally, data comparing on how MKCLASS performed on classifications of spectra compared to some experts in the field was presented and discussed.

### **General Business**

- Visitors Recognition.
- GRCO Volunteers - If you would be interested in volunteering to assist with the GRCO telescope during public nights please let Claude know. You don't have to be an expert in astronomy to greet folks and help with crowd control.
- Upcoming Public Events - A review of the upcoming public events including items below. Email [events@evaonline.org](mailto:events@evaonline.org) if you would like to volunteer.
- EVAC Rental Program and Inventory Sales ([Link](#)) - If you have any questions, email [properties@evaonline.org](mailto:properties@evaonline.org). The Rental Program is for members only and includes two telescopes: an 8" GOTO [Celestron Nextstar SC8](#) and 10" [Celestron C10-N Dobsonian](#). Each scope

# What's Up - Some Astronomical Events of Note for May 2023

by James Yoder

Here we make note of some interesting astronomical occurrences for the month that are visible from the Phoenix Metro area. Events we are on the lookout for include:

- [Transits](#) – When a celestial body passes directly between a larger body and the observer. For example when one of the inner planets such as Venus passes in front of the Sun ([image](#)).
- [Eclipses](#) – Specifically we are focused on [Lunar Eclipses](#) (where the Earth passes between the Sun and the Moon) and [Solar Eclipses](#) (where the Moon passes between the Sun and the Earth).
- [Comets](#) – For the comets we are focused on bright comets ([image1](#), [image2](#)) or ones that may have a near miss with other astronomical objects such as globular clusters, planets, nebula, etc ([image](#)).
- Planet Activity – [Oppositions](#), [Conjunctions](#) ([image1](#)) and [Occultations](#) ([image2](#)) of note that may be an opportunity for observation or photography. For Jupiter, we also note when multiple moon shadow transits are visible.
- Visually Interesting astronomical alignments such as Moon & planets arrangement in the morning or evening sky ([image1](#)).

Equipment Requirements are noted as follows:

- NE – **N**aked **E**ye event, no equipment needed to appreciate this.
- BI – A decent pair of **B**inoculars are recommended.
- CT – **C**amera on a **T**ripod can be used to capture this event.
- TS – **T**elescope required to view this event

Date	Event	Time	Equipment	Images	Ref	Comments
05/05	Full Moon					
5/17	Jupiter - Double Shadow	04:52 05:58	TS			A double moon transit and
5/17	Moon/Jupiter Occultation	04:20am 05:12am	NE, BI, CT, TS	<a href="#">1</a> , <a href="#">2</a> , <a href="#">3</a>	<a href="#">1</a>	Jupiter going behind the moon.
05/19	New Moon					

These events and others throughout the year can be viewed on my webpage [here](#), Happy hunting!

## Member Swap Meet

May 19, prior to our meeting in the Shakespeare Room. Bring your used equipment for sale to a new home. The sale is from 7–7:45 pm. A great chance to clear out the garage or to stock up for summer Milky Way viewing.

## EVAC Outreach Events

by Claude Haynes

### May Outreach Events:

- Friday, May 12 – 2nd Friday Riparian Star Party.

Details can be found on the EVAC website. Just go to [www.evaconline.org/events-meetings](http://www.evaconline.org/events-meetings). Click on the calendar entry for location and times. Contact Claude Haynes (interim Events Coordinator) if you can volunteer at an event. It is helpful to know who is coming so we can inform you of where the observing field is located and how to gain access.

# The Backyard Astronomer

by Bill Dellinges

## Here come the Globulars

From spring to summer, a parade of some of the finest globular star clusters in our Galaxy will show off their stuff. Here are arguably the top six globulars sending us their photons in coming months. First, a brief primer. They are fascinating objects in the astronomical zoo and drive astronomers crazy trying to understand them. They are spherical or "globe" shaped (hence their name) and can contain 50,000 to 1,000,000 stars with diameters of 100 to 200 light years. At their core, stars may only be 1/3 of a light year apart. They are typically old stars that are metal poor. They form a halo around their host galaxies - 157 have been detected in our Milky Way Galaxy. Most galaxies seem to have them, M31 has 500, M87 hosts 13,000.

These objects give astronomers headaches because they are simply more complex in nature compared to the simple formation of the other type of star cluster, the open or galactic star cluster, in which stars just form from clumps of hydrogen gas in a nebula in the plane of spiral galaxies such as ours.

Here are six of these intriguing stellar beehives in order of right ascension and approximate transit time at 8 p.m.

**M3**, Canes Venatici (Transit time mid-June). Distance: 34,000 light years (ly). Diameter: 220 ly. Number of stars: ~500,000. Magnitude and size in arc minutes: +6.4" and 16'. Find it tip: The top two stars in Coma Berenices, Beta and Gamma, make a line going east and equal to their separation delivers you to M3 in Canes Venatici.

**M5**, Serpens Caput (Western half). (Transit time - early July). Distance: 24,000 ly. Diameter: 150 ly. Number of stars: ~500,000. Magnitude and size: +5.8 and 21'. Note star 1/2 degree SE of M5 is 5 Serpentis, a double star: Struve 1930 mag. 5.1, 10.1, separation 20". Find it tip: In eastern Virgo, a line through 109 and 110 Virginis going eastward and equal to their separation lands you on top of M5 in Serpens.

**M4**, Scorpius. (Transit time - late July). Distance: 10,000 ly. Diameter: 100 ly. Number of stars: ~100,000. Magnitude and size: +5.9 and 35'. Find it tip: Only 1.5 degrees west of Antares. Note: Nearest globular star cluster to us.

**M13**, Hercules. (Transit time - late July). Distance: 26,000 ly. Diameter: 160 ly. Number of stars: ~1,000,000. Magnitude and size: +6.0 and 21'. Notes: King of the globulars for northern observers due to its size, brightness and high position on the celestial sphere. It's conspicuous in an 8x50 finder even in light polluted skies. Find it tip: 1/3 of the way from Eta to Zeta Herculis, the two 3rd magnitude stars on the western side of Hercules' Keystone asterism. The view of M13 in an 11" SCT at 215x is unforgettable.

**M22**, Sagittarius. (Transit time - early August). Distance: 10,400 ly. Diameter: 100 ly. Number of stars: ~83,000. Magnitude and size: +5.1 and 33'. Find it tip: two degrees NE of Lambda Sagittarii, the Teapot's Lid star. Notes: Its low elevation causes some dimness but its beauty is boosted by myriad background stars of the central Milky Way where stellar traffic is heavy. The writer considers M22 his favorite globular star cluster after M13. I have spoken.

**M15**, Pegasus. (Transit time mid-October). Distance: 34,000 ly. Diameter: 200 ly. Number of stars: ~100,000. Magnitude and size: +6.4, and 18'. Find it tip: Recall Pegasus appears upside down to us in the U.S.A. In perhaps the simplest case of finding a globular, a line from the steed's neck and snout stars (Theta and Epsilon) point NW directly at M15 (about half the distance between those two stars). M15's core is unusually dense; there, stars may be as close to one another as the Sun - Pluto distance (I miss Pluto).

One last point to enhance your viewing pleasure of globular star clusters - they do require higher powers (100x to 250x) than open star clusters because their stars are more closely packed together than open clusters. For more detail about these bazarro objects, go to: [https://en.wikipedia.org/wiki/globular\\_cluster](https://en.wikipedia.org/wiki/globular_cluster).

# Deep Sky Imaging Target Highlights for May

by James Yoder

The average low [temperature](#) for May in the Phoenix metro area is 69° F. May 19<sup>th</sup> is a new moon with Astronomical dusk at 9:01 pm and Astronomical dawn at 03:48 am, giving us 6:47 hours of imaging time.

In this month's list there are over 127 object/configuration combinations provided of just about every class of deep sky object including 23 Globular Clusters, 9 Open Clusters, 13 Planetary Nebulas, 20 Nebula, 23 Dark Nebula, and 39 Galaxies/Galaxy Clusters. The galaxies have peaked, and the Nebula are starting to come out as we gain access to the Milky Way.

The [Prospective Imaging Objects Guide](#) (PDF download) covers objects that reach their highest point in the sky and cross the meridian (aka Transit) sometime between Astronomical Dusk to Dawn. We will be highlighting objects that transit roughly between 10pm and 2am. This ensures maximum imaging time over the month.

Happy Hunting!

## Some Highlighted Targets for May

Configuration	Page	Object(s)	Type	ImageLink
<b>Hyperstar</b>	21	Ophiuchus Complex (2 frame composite)	BN, DN, GC	<a href="#">120 min</a>
<b>Hyperstar</b>	26	Dark Horse Nebula (2 frame composite)	Bright Nebula	<a href="#">120 min</a>
<b>Primary Focus</b>	16	NGC 5905, NGC 5908	Galaxies	<a href="#">180 min</a>
<b>Primary Focus</b>	22	M-13 (Hercules Globular Cluster)	Globular Cluster	<a href="#">82 min</a>

Resources:

- [ArtCentrics.com](#) – [May Potential Targets Guide](#) (PDF download)
- [Telescopius](#) – Lookup objects, plan imaging session.
- [Field of View Calculator](#) – Test Different Telescope, camera & eyepiece combinations.
- [Astrometry.net](#) – Solve images captured by your system. Get image RA/DEC, pixel scale, image size, orientation of the image you have taken.

## Chiricahua Sky Village

If you are looking for a dark site with Bortle 1 skies, you can contact Christopher Smythies who is offering sites in Co-chise County. His operation is an LLC where individuals purchase shares in exchange for use of private plots of land on the 72 acre site. Contact him at [csmythies@comcast.net](mailto:csmythies@comcast.net) if you are interested.

**FULL MOON ON MAY 5 AT 10:34**

**LAST QUARTER MOON ON MAY 12 AT 07:28**

**NEW MOON ON MAY 19 AT 08:53**

**FIRST QUARTER MOON ON MAY 27 AT 08:22**

Monthly Meetings will be held in person and also presented live online using Zoom. See the EVAC Website for updates.

The monthly general meeting is your chance to find out what other club members are up to, learn about upcoming club events and listen to presentations by professional and well-known amateur astronomers.

**Our normal in-person monthly meetings have resumed. Also, the meetings will continue to be available online via Zoom.**

Our meetings are held on the third Friday of each month at the Southeast Regional Library in Gilbert. The library is located at 775 N. Greenfield Road; on the southeast corner of Greenfield and Guadalupe Roads. Meetings begin at 7:30 pm.

***Visitors are always welcome!***



**Southeast Regional Library**  
**775 N. Greenfield Road**  
**Gilbert, Az. 85234**



## Find Out What's Happening – Join EVAC-Announce List

If you would like to receive email announcements about EVAC meetings and activities, please join the EVAC–Announce mailing list. Click on the link below to subscribe. Enter your full email address in the box titled User Options and press OK. You will receive a confirmation email. Your privacy is respected by EVAC and we will never sell your email address, or use it for non-club relevant solicitations. This mailing list is designed for communication from EVAC, and does not enable users to respond to the message. If you wish to contact club officers, please use the list in the Contact-Us area on the Home page of our EVAC website. To subscribe to the EVAC–Announce mail group click: <http://www.freelists.org/list/evac-announce>. To unsubscribe use the same link, enter your email address and select Unsubscribe from the “Choose An Action” list. Another list to consider is AZ-Observing@groups.io, simply click on this link <https://groups.io/g/AZ-Observing> and follow the instructions on the page. EVAC also has a Facebook Group where members may share ideas, photos, and Astronomy related information. To join: EVAC Facebook [Group](#).

The Gilbert Rotary Centennial Observatory (GRCO) also has a Facebook Group where members may share ideas, photos, and Astronomy related information. To visit, please click on Gilbert Rotary Centennial Observatory - GRCO.

Gilbert Rotary Centennial Observatory is open on Friday and Saturday from sunset until 9:30pm. We need volunteers. Training is provided. Help us engage the community in the wonders of the night sky. Email [grco@evaonline.org](mailto:grco@evaonline.org) for information.

## Used Equipment For Sale at Great Prices

The East Valley Astronomy Club (EVAC) has just posted used astronomy equipment for sale.

- Sales are “As Is”
- Pick-Up-Only

Contact the EVAC Property Director (James Yoder) at [properties@evaonline.org](mailto:properties@evaonline.org) for more details and to answer any questions. Detailed information on products being offered can be found on the EVAC Sales webpage [HERE](#). This page includes a brief description of the items, photos and references (i.e. users manuals, ect.)

Equipment being offered for sale this month includes:

- **Edmund Scientific Astroscan Telescope**
- **Celestron Astro Fi 90mm Refractor Telescope**
- **Meade LXD75 EMC**
- **Baush & Lomb Criterion 4000 Telescope System**
- **Meade ETX 90EC”**

## EVAC Equipment Rental Program

The East Valley Astronomy Club (EVAC) Is introducing a rental program for EVAC Members. Details on terms and equipment can be found on the [EVAC Rent page](#). Currently the following items are available for rent:

- **Celestron C-8 with Nexstar GoTo Mount** \$25 first week, \$20 each week after (up to 4 weeks).
- **Celestron 10” Dobsonian Telescope** \$25 first week, \$20 each week after (up to 4 weeks).

Telescopes come with all equipment needed for observation (ie eyepieces, finder scope, power supply, etc.)

Contact the EVAC Property Director (James Yoder) at [properties@evaonline.org](mailto:properties@evaonline.org) for more details and to answer any questions.



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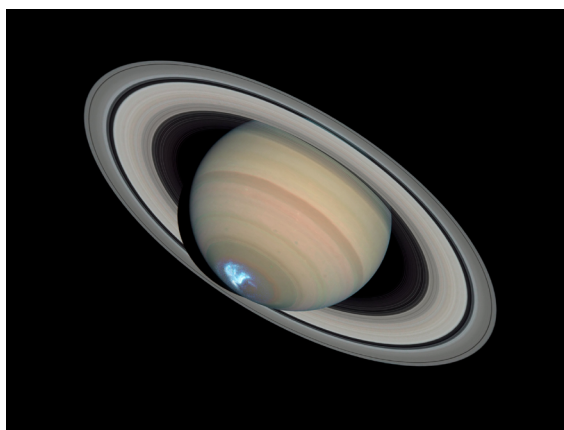
At the site: Bathroom facilities, running water, 5 pads w110v, wifi, acres of grassy camp sites.

From the site: Very Large Array 42mi E, The Astronomical Lyceum 55mi E, MRO Observatory 80mi E

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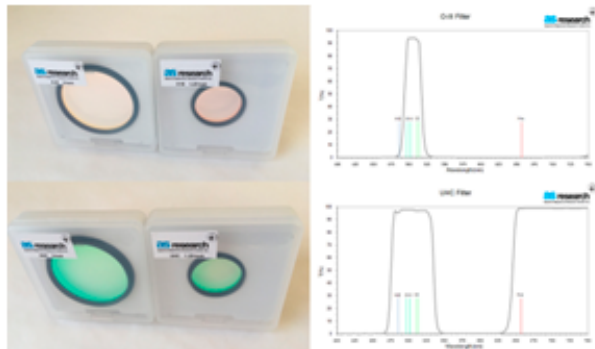
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## MAY 2023

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2	3	4	5	6
7	8	9	10	11	<b>10</b>	13
14	15	16	17	18	<b>19</b>	20
21	22	23	24	25	26	27
28	29	30	31			

**May 12** - EVAC Riparian Star Party

**May 19** - EVAC Monthly Meeting

## JUNE 2023

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1	2	3
4	5	6	7	8	<b>9</b>	10
11	12	13	14	15	<b>16</b>	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

**June 9** - EVAC Riparian Star Party

**June 16** - EVAC Monthly Meeting

## East Valley Astronomy Club - 2023 Membership Form

<b>Member Dues</b> (Based on the month you are joining the club)			
	<b>Individual</b>	<b>Family</b>	<b>Student (18yr+ with ID)</b>
January - June	<b>\$30.00</b>	<b>\$35.00</b>	<b>\$20.00</b>
July - December ( <i>Renew in January</i> )	<b>\$15.00</b>	<b>\$20.00</b>	<b>\$10.00</b>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<b>Renewal Dues</b> (Current Members Only)			Astronomical League: \$7.50 Annually: <input type="checkbox"/>
Individual	Family	Student (18yr+ with ID)	
\$30.00	\$35.00	\$20.00	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

**Name Badges:**      Quantity: \_\_\_\_\_

**\$10.00** Each

Name to imprint: \_\_\_\_\_

**Total amount enclosed:**

Please make check or money order payable to EVAC.  
Payment will be made using PayPal:

Name: <input style="width: 95%;" type="text"/>	Phone:	<input style="width: 95%;" type="text"/>
Address: <input style="width: 95%;" type="text"/>	Email:	<input style="width: 95%;" type="text"/>
City State Zip	URL For website	<input style="width: 95%;" type="text"/>

Would you be interested in our outreach program?      Yes       No

How did you discover East Valley Astronomy Club?

### Liability Release Form

In consideration of attending any publicized Star Party hosted by the East Valley Astronomy Club (hereinafter referred to as "EVAC"), the receipt and sufficiency of which is hereby acknowledged, I hereby affirm that I and any related entities, predecessors, successors, affiliates, attorneys, guarantors, insurers, transferees, assigns, parents, spouses, children, subsidiaries, accountants, officers, directors, employees, agents, shareholders, members, and trustees, past and present, hereby forever release, acquit and discharge to hold EVAC and its related entities, predecessors, successors, affiliates, attorneys, guarantors, insurers, transferees, assigns, parents, spouses, subsidiaries, accountants, officers, directors, employees, agents, shareholders, members, and trustees, past and present, from any and all causes of action, claims, losses, damages, liabilities, expenses (including attorneys' fees) and demands of any nature whatsoever, known or unknown, that in any way relate to, arise out of, or concern EVAC and/or my presence on the premises of any EVAC Star Party and related areas, whether or not those causes of action, claims, damages, liabilities, and demands are part of the specific subject matter of EVAC or any EVAC Star Party. This release is intended to and does cover all injuries and damages, and the consequences thereof, whether known or unknown at the time of the execution of this release, which have occurred or may hereafter occur or which may hereafter be discovered, and which may have been caused or may be claimed to have been caused by the said incident, and specifically includes, but is not limited to, bodily injuries, mental and emotional injury, pain and suffering, medical treatments, and loss of earnings or income.

My signature upon this form also indicates agreement and acceptance on behalf of all minor children (under 18 years of age) under my care in attendance. EVAC only recognizes those who are members or invitees and who also have a signed Liability Release Form on file as participants at an EVAC Star Party.

*The Observer is the official publication of the East Valley Astronomy Club. It is published monthly and made available electronically as an Adobe PDF document the first week of the month. Please send your contributions, tips, suggestions and comments to the Editor at: [news@evaonline.org](mailto:news@evaonline.org). Contributions may be edited. The views and opinions expressed in this newsletter do not necessarily represent those of the East Valley Astronomy Club, the publisher or editor.*

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*Secretary: James Yoder*

*Treasurer: Brooks Scofield*

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*Events Coordinator: Claude Haynes*

*Property Director: James Yoder*

*Refreshments: Open*

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*AL Representative: Brooks Scofield*

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*Webmaster: Marty Pieczonka*

*GRCO Webmaster: Brandon Feldman*

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