

# The Observer

The Official Publication of the Lehigh Valley Amateur Astronomical Society

<https://lvaas.org/>

<https://www.facebook.com/lvaas:astro>

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LVAAS Director, Benjamin Long with Dr. Bonnie Buratti.  
Photo courtesy: Benjamin Long

**We were honored** to have Dr. Bonnie Buratti visit LVAAS last month. Her presentation, "Exploring Alien Seas in the Solar System," captivated us as she shared her expertise on the moons of Jupiter and Saturn, the missions that have, and will visit them, and the tantalizing possibility of oceans harboring life.

Dr. Buratti's talk not only expanded our knowledge but also ignited our passion for exploring the unknown realms of our solar system. We extend our deepest gratitude to her for taking the time to engage with us and share her invaluable insights, along with her copious enthusiasm. Thank you, Dr. Buratti, for an unforgettable evening and for inspiring us all!

~ Benjamin Long



Dr. Buratti delivers her presentation inside LVAAS's Grady Planetarium. Photo Courtesy: Aidan Berger

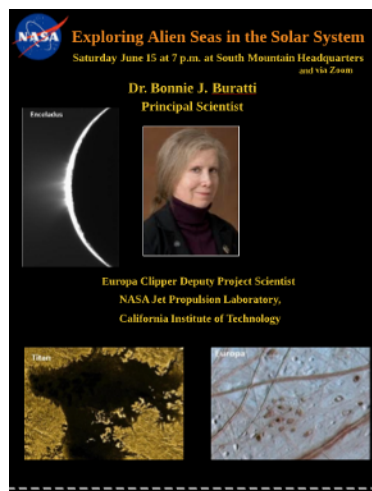


LVAAS Star Party June 15, 2024  
Photo courtesy: Aidan Berger

**Star Party Coordinator Aidan Berger** would like to thank these LVAAS members who helped to make the event a success:

**Tom Julius and his family** for all their help with the RedShift, **Blaine Easterwood** for his help setting up the Zoom, **Dr. Bonnie Buratti** for her amazing presentation, and **all the volunteers** who spent their time helping out during the event:

- Bill Dahlenburg**
- Bill & Ruth Lodder**
- Eric Loch**
- Jamie Elovski**
- Joe Zitarelli**
- Earl Pursell**
- Phil Doherty**



- Mike Clark**
- Kyle Kramm**
- Tom Duff**
- Ben Long**
- Linda Prince**
- Mike Huber**
- Pete Brooks**



Join the

## Lehigh Valley Amateur Astronomical Society

for Our

### General Meeting, Annual Picnic, Pot-Luck, and Swap Meet!

**When:** Saturday, July 13th at 4:30 p.m. (Rain Date: Sunday, July 14th)

**Where:** South Mountain

#### Schedule:

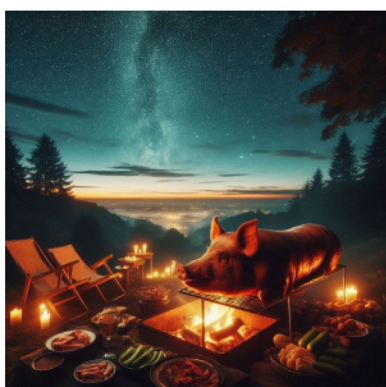
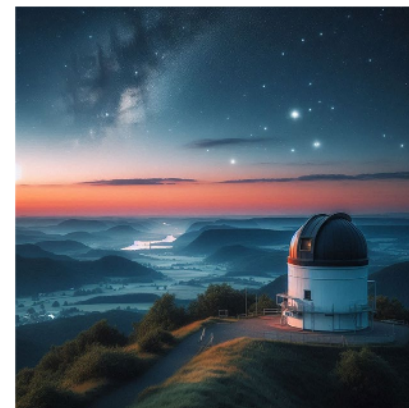
- **3:00 - 4:30 p.m.:** Volunteers needed for setup
- **4:30 - 5:00 p.m.:** Arrival and food drop-off
- **5:00 - 7:00 p.m.:** Pot-luck dinner featuring a pig roast, burgers, hot dogs, roasted potatoes, and beverages (provided by LVAAS)
  - Bring a side dish or dessert to share
- **7:00 - 9:00 p.m.:** General Meeting with a presentation on new imaging equipment available for members to rent and use  
Our speaker will be former LVAAS Director, Mike Huber.

#### Highlights:

- Swap Meet: Buy or sell astronomy-related equipment
- Great food and beverages
- Exciting presentation
- Silent auction

As in past years, LVAAS will be selling excess telescopes via silent auction. Telescopes to be auctioned off include a 10" Meade SCT, Meade 8" SCT, 8" Coulter Dob, Orion 6" Starblast, and various 4 to 5-inch go-to and manual Newtonians.

Don't miss this opportunity to connect with fellow astronomy enthusiasts!





## Minutes from the LVAAS General Meeting – June 9, 2024

The June 2024 LVAAS General Meeting was conducted electronically using an on-line service and at the South Mountain headquarters. Approximately 45 people were in attendance.

Secretary Joe Zitarelli opened the meeting at 7:01 p.m.

Tonight’s General Meeting’s presentation "Spaceships for the 21st Century; aka: SpaceX and the 7 Little Dwarfs" was given by John Conrad. John followed his childhood interest in space and spaceflight through Astronautical Engineering degrees at the US Air Force Academy and Purdue University straight into leadership in unmanned space programs for the Air Force and NASA. Now retired, his extensive career experiences never wandered far from technology development and application, in Aerospace and Defense as well as IT and Energy and Security programs. His life-long learning (both formal and informal) and accumulated tools have enabled him to make frequent presentations to orient and promote science applications and solutions to a variety of audiences. His most recently used platforms include telescopes and binoculars to share his knowledge and love of Astronomy and Cosmology. John is eager to speak to us today as a NASA/JPL Ambassador - bringing us the expertise of NASA scientists and engineers, providing insights into US progress in exploring space.

The presentation will begin with the historical context for how the 20th century prepared us for a much more dynamic, and fortunately more affordable, situation for getting into LEO and beyond today and tomorrow. What has happened in the last couple decades is truly astonishing, a story of what commercial business types like to refer to as Disruptive Technology Changes. The starting gun (guns actually), which may have been long overdue, are NASA’s commercial space initiatives. John made it clear at the beginning that this is his own presentation and not NASA sponsored. He characterized the seven American companies involved in space exploration as:

<u>Old Space</u>	<u>New Space</u>	<u>Space Lite</u>
Boeing	SpaceX	Rocket Lab

ULA	Blue Origin	FireFly Aerospace
Northrop Grumman	Virgin Galactic	

SpaceX is the global leader by all measures. It was founded in 2002 and by 2022 had \$4.6B in annual revenue. In 2008 they launched the Falcon 1 with one Merlin engine which was reusable. They had 3 failures before success on their 4th attempt. In 2010 they launched the Falcon 9 with nine Merlin engines and in 2012 this rocket was used to make a delivery to the ISS. In 2015 they had their first success with a vertical landing of a Falcon 9. In 2018 they were able to launch a rocket with three Falcon 9 rockets for a total 27 Merlin engines. In 2020 they used their Dragon capsule to take 2 astronauts to the ISS. The capsules are also reusable, bringing the “seat cost” down to between \$60M and \$72M. In 2023 there were 96 Falcon 9 launches and 87 were reused. This reusability is a game changer. The next step is the Starship capsule. The Super Heavy has 33 Raptor engines in the first stage and 6 in the second. The April 2023 test flight failed. The November 2023 test achieved separation, then both parts exploded. March 14, 2024 launch did well, got into space, and landed hard in the ocean. The 4th test launch on June 6, 2024 both the Super Heavy rocket and Starship capsule had both a good launch and controlled landings.

Boeing was founded in 1916. They have been involved in space since the use of their Saturn rockets on the Space Shuttle. They are currently designing and building the Artemis rockets. Artemis I is to be an unmanned mission past the moon. Artemis II will be a crewed flight into space. Artemis III will be the first crewed mission to the moon that will begin propellant aggregation in a propellant depot. Artemis IV to Artemis VIII are additional planned moon missions. They currently have a new facility under construction in Florida.

United Launch Alliance (ULA) is a joint venture between Lockheed Martin and Boeing. They have had 159 launches with a 100% success rate. They only have 16 remaining launches. They use the Vulcan Centaur, a heavy lift two-stage launch vehicle that uses two Blue Origin BE-4 engines. The end may be near for this company due to SpaceX success unless they can raise capital possibly as an IPO.

Northrop Grumman was created in the 1990 by the merger of 2 companies. In 2018 they got into space travel by acquisition of Orbital ATK. The Antares launch vehicle saw its final launch in 2023. Their Cygnus cargo spacecraft was used for ISS delivery. They are contracted with FireFly to build medium launch vehicles.

Blue Origin was founded by Jeff Bezos in 2000. It has revenue of about \$43M. Its first NASA contract was for crew development in 2009. In 2012 they launched their first reusable suborbital flights. They are predominantly involved in space tourism. They had their first test flight in 2015 and their first successful test flight in 2018. In 2021 they had their first crewed space flight with Jeff Bezos as one of the crewmembers. They had 5 space tourism flights in 2021-2022 but a failure in 2022 put the program temporarily on hold. Their sixth flight was in May. They plan to have an orbital launch in September to be called New Glenn. They are involved in engine development of the BE-4 engine that

will have an LNG propellant (methane). They are also involved in the Blue Moon landing HLS (Human Landing System) to be employed for Artemis V.

Virgin Galactic was founded in 2004 by Richard Branson. His plan was for commercial space tourism. They used the VMS Eve aircraft to lift the VSS Unity rocketship. This was able to carry 4 tourists into space for 15 minutes. Their plan is the VSS Imagine which will carry six passengers. It is questionable if this company can survive.

Rocket Lab was founded by Peter Beck in New Zealand in 2006 but moved its headquarters to California. Its first Department of Defense contract was in 2010 to study low cost launches for cubesats. It offers small Sat launch vehicles and currently has revenue of about \$211M. Their Electron rocket can carry 200 kg into low earth orbit. The rocket is reusable and the first successful launch was in 2018. It has 22 launches planned in 2024. It has the Neutron medium launch vehicle with a projected first launch in mid 2025 with a planned payload of 8000-13000 kg.

FireFly Aerospace was started in 2014 with a planned 2016 launch but had multiple business issues. It was reborn in 2017 and moved to Florida. In 2023 it successfully launched its Alpha orbiter. It has had 2 lunar landings. It may be sold.

Putting it all in perspective, the record for most space launches in a year was held by the USSR with 108 in 1982. In 2023 the United States broke that record with 116 launches. Of those, 96 launches were by SpaceX with 87 being reused. Recently the Russian systems have been failing. The Chinese and the Indian space companies are getting more involved.

After questions we took a break at 8:32 p.m.

The informational meeting resumed at 8:44 p.m.

#### Membership: Rich Hogg

- The following member completed their Second Reading and is now a Full Member:  
Fallon Smith
- The following members completed their First Readings:  
No one
- The following members have previously completed a First Reading and are still eligible to complete a Second Reading to become full members:  
Brian A. Brown  
Mike Cutrera  
Daniel Jackson  
Cynthia Kuhns  
Theodore Opperman

Mehar PowarDavid Stech and Jill Youngken (family membership)  
Christine and Timothy Talley (family membership)  
Miretta Wadopian  
Scott Wilson

### Pulpit Rock Observatories – Frank Lyter

- Due to donations we have entry level telescopes at both Pulpit Rock and at South Mountain for members to use. Contact Frank if you are interested.
- Ron Kunkel will be adding another meteor camera to the network. If any other members are interested in having a meteor camera, contact Frank. The cost of the parts is about \$150-200.

### South Mountain Observatories & Rentals - Mike Clark

- We have had a lot of donations of telescopes. We will be auctioning off many telescopes at the picnic in July.
- Training is available on all of the telescopes at South Mountain as well as the rentals. This includes a newly purchased imaging system available for rental. Contact Mike Clark if you are interested.
- There has been a lot of informal observing at SM recently. Sign up for the South Mountain IO so you will know when people will be going up to South Mountain.

### Astro-Imaging - Tom Duff

- The next Astro-Imaging meeting will be June 29th at 7:00 p.m. at South Mountain. All levels are welcome to attend.

### Stargazers - Kyle Kramm

- The next informal meeting will be this Friday June 14 at 7:00 p.m. at South Mountain. If it is clear we will open some of the club scopes and feel welcome to bring your own equipment.

### Star Parties - Aidan Berger

- The next Star Party is Saturday June 15 and we will have a special guest speaking at 7:00 p.m. Bonnie Buratti, PhD, is a Deputy Project Scientist for the Europa Clipper mission with the NASA Jet Propulsion Laboratory. She will be speaking about the Europa Clipper mission, with a planned launch in October 2024. Bonnie is originally from the Lehigh Valley and is a Lifetime Member of LVAAS.

- Because of the expected number of people, we are asking for volunteers to work at the Star Party.

#### Member Services (Red Shift Store) - Thomas Julius

- We plan to have pizza available at the upcoming Star Party. There will be a special of 2 pieces of pizza and a drink for \$5.

#### Education - Blaine Easterwood

- We will view Adventures in Astronomy each Tuesday evening at 7:30 p.m. at South Mountain. Adventures in Astronomy is an introductory course being given live and all members are welcome to attend at no cost. For more information about the course you can go to [www.astronomyteacher.com](http://www.astronomyteacher.com)

#### South Mountain Maintenance - Bill Dahlenburg

- We expect the new roof to be completed on the dome this week.

#### General Programs - Sandy Mesics

- We are still looking for someone to present a program in November at the General Meeting. We encourage members to volunteer if you have something you would like to present. If you are interested, please contact Sandy at [astrosandy@gmail.com](mailto:astrosandy@gmail.com)

#### Next General Meeting:

- The next General Meeting will be Saturday July 13 at 5:00 p.m. at South Mountain. This is the annual picnic and all are invited to attend. The rain date is Sunday July 14 at 5:00 p.m.

The June 2024 General Meeting was recorded.

The meeting was adjourned at approximately 9:00 p.m.

Submitted by Joe Zitarelli, Secretary



# LVAAS General Meeting & Annual Picnic

Saturday, July 13, 5 p.m.  **Rain Date July 14**

**South Mountain Headquarters and via Zoom**

## "LVAAS Imaging Equipment"

*presented by*

**LVAAS Member and Former Director**

### **Mike Huber**

In this presentation, we'll explore the exciting new equipment our astronomy club has acquired, including the ZWO Seestar S50, SkyWatcher Star Adventurer 2 Pro Pack, and a comprehensive astrophotography rig featuring an EQ6 mount, Stellarvue 102 telescope, ASI585MC Pro, and various accessories. We'll cover the key features, setup processes, and usage tips for each piece of equipment, ensuring our members are well-equipped to enhance their stargazing and astrophotography experiences. Towards the end we will cover the rental fleet and how members can rent the different instruments LVAAS has available.

**Michael Huber** was first introduced to astronomy by his father, a professor of astrophysics, who patiently answered his many questions about the cosmos. Memorable events like viewing comet Hale-Bopp, meteor showers, and observing deep sky objects and planets through his father's telescopes furthered his love for the night sky. Upon joining LVAAS, Michael quickly got involved in astrophotography and has taken many photos, some of which have been published. In addition to his personal pursuits, Michael also shares his knowledge and enthusiasm through talks at local libraries and presentations at LVAAS.



*Prospective new members who wish to attend the meeting please email [membership@lvaas.org](mailto:membership@lvaas.org).*



Pulpit Rock Panorama by Michael L. Morgan ~ submitted by Sandra Repash

***Via Sandy Mesics, Programs Chairperson***

Upcoming LVAAS General Meeting Speakers

**July:** Mike Huber et al. will speak on "The Seestar 50 and other Imaging Instruments in our Rental Fleet"

**August:** (*Pulpit Rock*) Brett Fadem will speak on "The New Muhlenberg Observatory"

**September:** Steve Conrad will speak via Zoom on "Occultations"

**October:** Mario Motta will speak via Zoom on "Building a 32-inch Telescope and Observatory"

**November:** Dave Moll will speak on "Lore of the Ancient Skies"

**December:** Emma Page (Lehigh U) will speak on "Transits and Eclipsing Binary Stars"

- ▶ Please contact [astrosandy@gmail.com](mailto:astrosandy@gmail.com) if you have ideas for speakers, or would like to volunteer.

***KUDOS! THANK YOU, LVAAS VOLUNTEERS!***

July's kudos go out to LVAAS members **Art Lukoff, Dave Lorchak, Cedric Lumsden, Lou Velez, Aidan Berger, Ron Kunkel, and Frank Lyter**, who formed a work crew to improve safety conditions in and around our Pulpit Rock Observatories. Thank you for all you do for LVAAS! Kudos!

***Via Earl Pursell***

There's still time to sign up for the Stellafane Convention 2024 if you have an interest in telescope making. For information on this event, which is held from August 1-4, please check out this link: <https://stellafane.org/stellafane-main/convention/2024/index.html>



***Via France Kopy, Observer Editor***

In May I stated that I intended to put together a special edition of our members' eclipse images. Turns out the date that I hoped this would be completed by was somewhat ambitious. I'm working on it; please stay tuned. Also, if anyone is interested in helping out with our newsletter, please contact me [editorlvaas@gmail.com](mailto:editorlvaas@gmail.com)

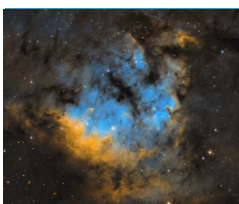
***Via Sandy Mesics, Programs Chairperson***

Some of you may remember our screening of the film Luminous at our October 2021 general meeting. The film is now streaming if you wish to see it again. (If you do watch the film on any of the streaming platforms, please be sure to leave a review! Remember, it's still [free on Kanopy!](#))



***Via Earl Pursell, UACNJ Liason***

Public Program Nights have resumed at United Astronomy Clubs of New Jersey; please visit [uacnj.org](http://uacnj.org) for info.



cover: NGC 7822 in Cepheus      **Imager: John Kmetz**

Taken using an ASI2600MM-Pro on an Esprit 100ED

Learn more [here](#)

5 Hrs. Ha, 6 Hrs. OIII and 4.5 Hrs. SII

Imaged in Upper Providence, PA

## Education and Outreach News and Opportunities

Our bylaws list the following as our #1 purpose:

*“To encourage and promote interest in the study of astronomy and its allied subjects from the amateur standpoint.”*

It is in that spirit that I share the following information:



Blaine Easterwood

### Astronomy Course

We are meeting on Tuesday evenings for an astronomy course this summer. If you are free, stop in and share the wonders of astronomy with us. Here are the details of the course:

Adventures in Astronomy: Approaching Infinity  
Tuesdays, 7:30 PM-9:00 PM, Eastern Time, over Zoom  
June 11 thru August 13, 2024

Thanks again to Joe Zitarelli and Linda Prince for coordinating and facilitating this! We are meeting at South Mountain and viewing the Zoom meeting as a group. More information on the course can be found at the following link: <https://www.astronomyteacher.net/>

Please let Joe, Linda, or Blaine know if you will be attending: [education@lvaas.org](mailto:education@lvaas.org)

**LVAAS is showing Adventures in Astronomy**, an introductory course in Astronomy. We are viewing it live on Tuesday nights at South Mountain starting at 7:30 p.m. This is a free offering for LVAAS members, and you are welcome to attend as many or as few as you like. Each lesson lasts about 90 minutes.

#### The upcoming topics are:

**July 9** Distances using cepheid variable stars; M31 as a galaxy, sun, fusion, the Hertzsprung-Russel diagram

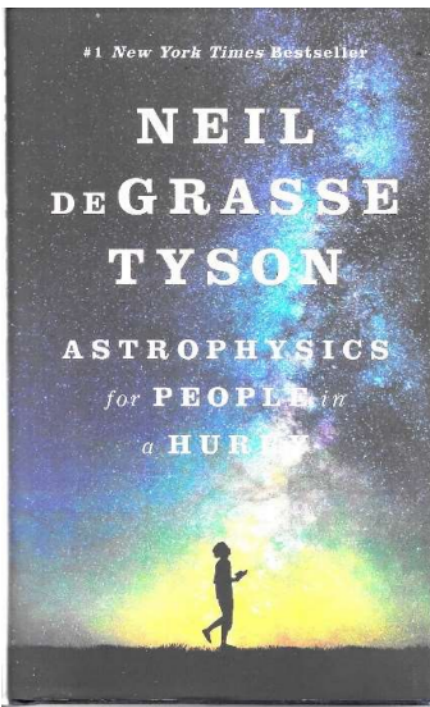
**July 16** Identifying atoms in stars; star characteristics, luminosity, element creation and supernovae

**July 23** Neutron stars, black holes, pulsars, professional telescopes, building the Extra Large Telescope (39 meters)

**July 30** Radio and space telescopes; Observing the sky: Stars, Moving Groups, Mars, the Moons of Saturn and Jupiter

**August 6** Galaxy Classification., Active Galactic Nuclei, Blackbody and Synchrotron Radiation, the Cosmologic Red Shift.

From the Library – Joe Zitarelli



“There is much to enjoy here, and nothing too arcane for a non-space cadet to follow” – Dava Sobel

“I want to learn about the night sky.” This is what we frequently hear from new members of LVAAS. Or are they really hoping to learn about what’s up there and where we fit in this gigantic universe? You can’t get all the answers from one book, but this little book is a pretty good place to start.

This is the first time I’ve read anything by Neil deGrasse Tyson (NDT) and I now know that he writes just like he talks. He speaks in a language we can all understand. Sometimes just the term *Astrophysics* can be a little intimidating because it has the word *Physics* in it. But just as NDT comes into our living room and explains difficult topics in a non-intimidating way, his writing in *Astrophysics for People in a Hurry* is easy to read.

Chapter 1 is “The Greatest Story Ever Told”. It has nothing to do with the 1965 biblical movie. But it does have to do with creation. In 17 small pages he gives a summary of the highpoints of The Big Bang Theory. I’m not saying you will have the knowledge of an expert after reading chapter 1. You do have the option to read Steven Weinberg’s classic *The First Three Minutes* instead but that would take many, many hours. But if you are in hurry, this NDT chapter will bring you up to speed quickly. And who isn’t always in a hurry?

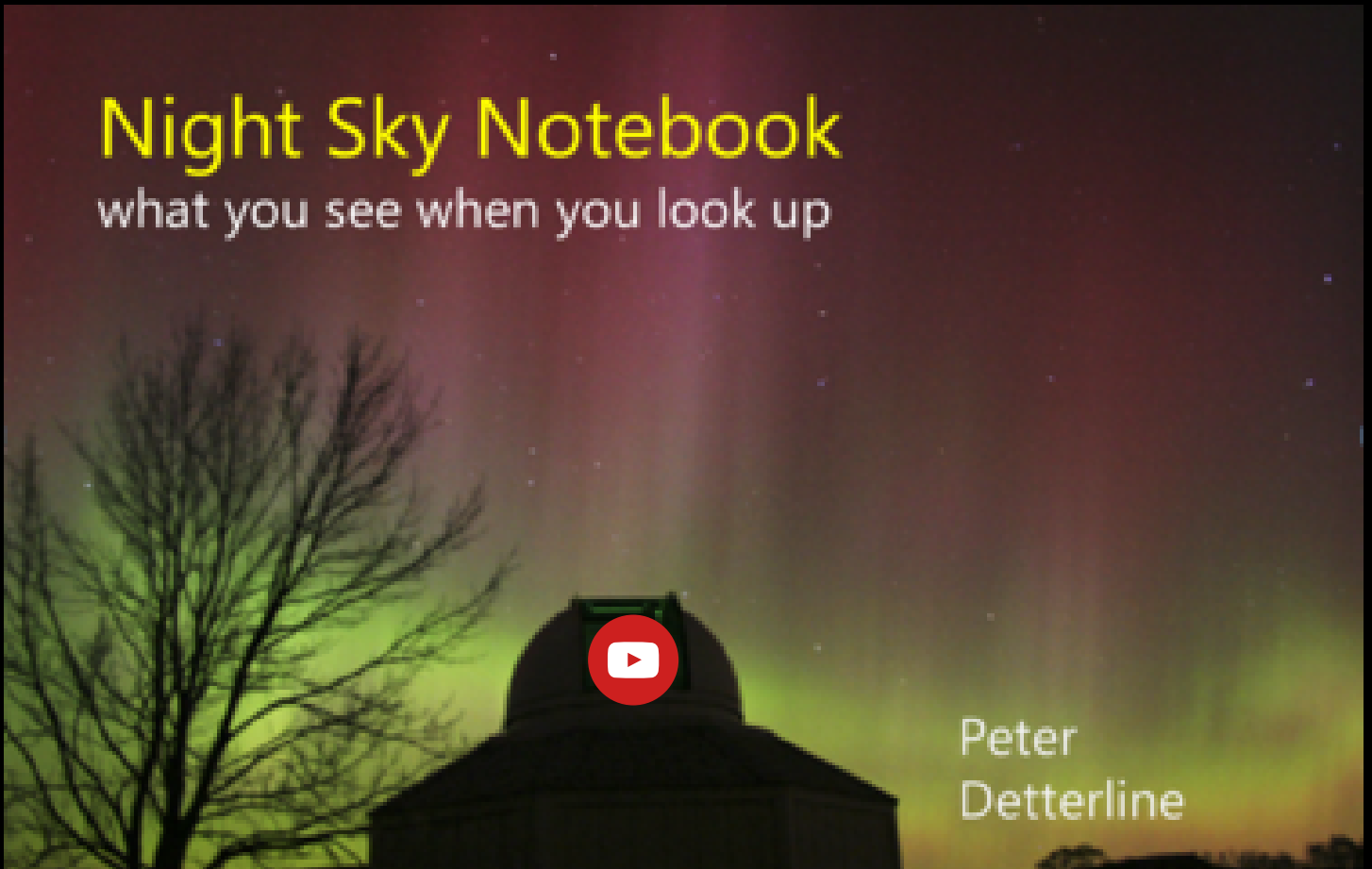
In chapter 2, “On Earth as in the Heavens”, the author goes on to discuss some basic rules you may not have ever thought about. The same laws of nature here on earth also apply to those faraway objects we see through our telescopes. Chapter 3 is back to the Big Bang as he explains the scientific confirmation of the Big Bang.

After chapter 3, it’s on to the fun stuff. We’re talking about some really big stuff like galaxies. And then it’s onto some stuff that’s pretty exotic. We can’t see it, and we can’t feel it, yet it makes up most of the matter in the Universe. We really don’t know what Dark Matter is nor do we know what it’s made of. But we do know that it isn’t made up of normal matter that we are used to dealing with. Then it’s on to Dark Energy and accelerating expansion of the universe. Yes, accelerating expansion of the universe! Once again, we don’t know what it is, but Albert Einstein put it in his equations of General Relativity over 100 years ago, before he took it out of his equations and called it the biggest blunder of his life. Unfortunately, he didn’t live long enough to see it return. American physicist John Wheeler often said, “Matter tells space how to curve; space tells matter how to move”. Let that float around in your head while you’re trying to get to sleep.

This book is full of topics that will make you think. It will also give you a great foundation of knowledge in Astrophysics you will need if you try to read more complex books. Or you may just find reading this book gives you a much better understanding when you thumb through *Astronomy* magazine. I really enjoyed this book, and it is easy to read. This is not a textbook, but an explanation by someone we know we can trust to explain complex topics in an understandable manner. Enjoy.



*Peter Detterline's*  
**Night Sky Notebook**  
**JULY 2024**



## LVAAS Meteor Camera Coverage Areas

As has been reported before, we now have 5 meteor cameras operating within our LVAAS group membership. The locations and operators are as follows:

Station Code	Operator	Location
US002D	LVAAS	South Mountain
US002E	Terry Pundiak	Easton
US002L	John Kmetz	Upper Providence
US003Y	Steve Walters	Albrightsville
US004D	Tom Duff	Bethlehem

To show the coverage of every camera, the Global Meteor Network (GMN) posts KML files which can be found online at:

[https://globalmeteornetwork.org/data/kml\\_fov/](https://globalmeteornetwork.org/data/kml_fov/)

Each camera has listed 3 KML files for the altitudes of 25, 70, and 100 kilometers, resp. Coverage is determined by the ALT/AZ direction the camera is pointing and the diameter of the lens. All cameras we have use the sensitive IMX271 sensor which is intended for low light and IR security cameras. Most stations mentioned above use a 6mm lens while the one at South Mountain uses a wider FOV (shorter focal length) 4mm lens. The KML files can be downloaded by clicking on the station number, and then opened using Google Earth to see the projection in the sky. The attached pic shows the camera coverages all together at the 70 km height. So, when our members report seeing a large fireball while outside, they may or may not be in the direction that one of our cameras is pointing. This coverage map may be used as a general guide to judge if any visual observation had a chance of being officially detected.

Most meteors detected burn up high in the atmosphere but can reach lower altitudes (or hit the ground) depending on speed, composition, and size. The meteor showers which occur on the same dates each year come mostly from cometary debris which is very small in size, and overwhelmingly does not reach the ground. Comets also should not contain iron meteorites, like the nice examples shown by Gregory Shanos at the May 5<sup>th</sup> General Meeting. Irons and stoney/irons may be detected as sporadic meteors but

are probably not associated with the annual shower events.

We have extra components to assemble if you are interested in placing a finished and calibrated meteor camera at your home. The station operates autonomously and uploads the night's data each morning to the GMN server in Canada. The gathered results are much like those from operating a weather station, but instead of monitoring rain, wind, and temperature, you are measuring meteor direction and flux. For a scientific explanation of the purpose and operations of the network camera system, please see the following paper co-authored by Dr. Denis Vida:

<https://arxiv.org/abs/2206.11365>

Clear skies, John Kmetz and Frank Lyter

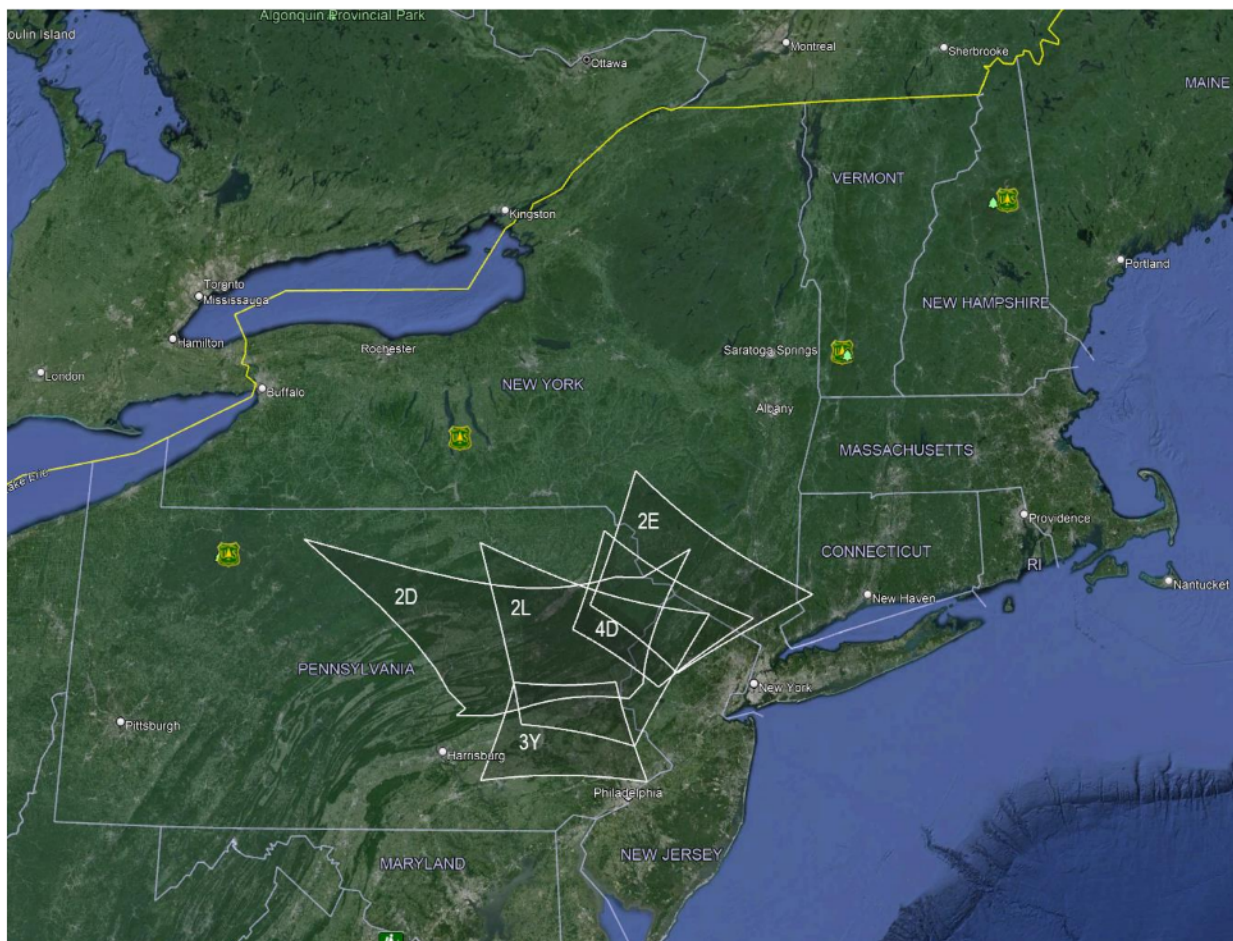


Figure 1. Coverage areas of LVAAS Meteor Cameras at 70 km



IC1318; The Butterfly Nebula in Cygnus Imager: John Kmetz  
ASI071MC camera with an L-eXtreme dual-narrowband filter on  
an Esprit 100ED refractor over 3 nights in June 2024.



## The Henry Kissinger of Energy Speaks at LVAAS

By Sandy Mesics

Fifty years ago, Gunther Cohn of the Franklin Institute spoke at the June general meeting. His topic was “Energy in Our Future.” According to the June 1974 *Observer*: “Mr. Cohn will briefly review the current energy situation and how we reached it; then polish his crystal ball and predict what the future is apt to hold. Some trends are quite clear. We will deplete the fossil fuels and have no choice but to manage without them. Nuclear, solar, and geothermal sources will help to fill the gap. These sources will be the major thrust of Mr. Cohn’s presentation.”



Cohn was a Penn State alumnus in mechanical Engineering and had been an employee of the Franklin Institute since 1947. He was a fellow in the American Society of Mechanical Engineers and a member of Sigma XI. Cohn was an expert in explosives: In 1961, he wrote a report on “Electric Initiators: A Review of the State of the Art,” for the Picatinny Arsenal, and in 1972 he spoke at a symposium on the peaceful uses of explosives at the University of New Mexico in Albuquerque. By 1975 he had published 16 books and manuals, written many technical articles, and edited two newsletters. He was very active in outreach: Cohn spoke on such things as lubrication, explosives, colloids, metals, magnetism, instrumentation, various uses for paper, and pressure devices. For many years, he was a judge at local science fairs, including the Franklin Institute Science Fair and the Delaware Valley Science Fair.



Gunther Cohn

In the 1970s, Cohn became an expert in energy conservation and alternate sources of energy. In November 1974, a few months after his LVAAS presentation, he was a featured panelist at a series of presentations in Wilmington Delaware entitled “Nuclear Power: Who Should Decide?” This series was sponsored by the Coalition on Nuclear Power Plant Postponement designed to bring together leading humanists to explore the question of nuclear power. The first session featured Cohn and Dr. Eugene Ferguson as well as a showing of the BBC Film, “Nuclear Dilemma.”

Additionally, throughout the 1970s, Cohn did a lot of programs in which he utilized the “Energy-Environment Simulator Game.” The simulator was manufactured by Tenntronics, a defunct company that was in business from the late 1960s through the late 1980s, and the simulator was made under contract from the U.S. Energy Commission. The patent for the device was granted in 1974, and according to the patent description: “Each

participant makes policy decisions to adjust energy demands and energy source allocations and observes, in compressed time, the consequences of their decisions. The time element is adjustable by means of a variable system clock, typically one simulated century passes each minute. The natural energy reserves are simulated in an analog computer circuit and the rate of depletion may be regulated according to well-established data as to quantities and the foretasted

Cohn Obituary from Newspapers.com

rate of depletion. ... The participants operate the simulator as a game where the objective is to see how long one can keep the society powered adequately without excessively polluting the environment and without exhausting all of the energy reserves." It came with a handsome storage cabinet that also served as a pedestal.



## Col. Norton Tries Energy Simulator

Col. Graham Norton, who spoke to Huntingdon area audiences on hydropower at Raystown Lake yesterday afternoon, was the first person to try his hand at energy management on the computerized game. The energy

simulator came to Huntingdon from Franklin Institute yesterday with Gunther Cohn, senior staff engineer of the Philadelphia research institute. Cohn is explaining the simulator's operation to Col. Norton.

PHOTO ABOVE: From Huntingdon PA Daily News, Oct. 8, 1975

In 1974, Cohn took the simulator on the road, and explained how to play the "Energy-Environment Simulator Game." At a Citizens Workshop on energy and the environment sponsored by the Atomic Energy Commission, Cohn was quoted as saying, "A world-wide crisis has occurred in the mid-1970s because we've been using up in 200 years what it took Mother Nature 200 million years to make."



Cohn demonstrates the energy environment simulator at Met-Ed.'s energy course. From the Lebanon PA Daily News, March 18, 1977

Over the next few years, Cohn would speak at various conferences, including at Penn State, Carnegie Mellon University, and Juniata College. He was usually accompanied by the game. At Carnegie Mellon, Cohn quipped: "There is a surplus of simple answers and a shortage of simple problems."

In October 1975, Cohn was a panel participant on "Save Energy Week" at Juniata College in Huntingdon PA. Cohn discussed long range prospects for new energy sources, and he pointed out that four factors were essential in energy discussions: technology, economics, environment and the government-political arena.

In January 1976 Cohn participated in a seminar on "Energy and Jobs for Pennsylvania" held at the Bellevue Stratford Hotel in Philadelphia. The next year, he spoke at the opening session of a seminar on energy designed for teachers and sponsored by the Metropolitan Edison Co. He demonstrated the simulator there as well.

Cohn brought the simulator to Philadelphia's Independence Mall in July 1977 for Earth Day. Sadly, Cohn would pass away a few months later, on November 22, 1977, at the age of 54. His obituary described him as "The Henry Kissinger of Energy."

## References

Huntingdon PA Daily News, Oct. 8, 1975

Pittsburgh Post-Gazette, February 26, 1975

The Energy Environment Simulator, at

<https://www.rootsimple.com/2014/01/the-energy-environment-simulator/>

Springfield OH News-Sun, December 10, 1974

*The Observer*, June 1974



# StarWatch

Earth's Equinoxes, Solstices, Perihelion, Aphelion Change			
2024/2025, Eastern Time			
Phenomenon	Date	US Naval Observatory	Time
Perihelion (Earth closest to sun)	2024 January 2		19:38 ST (7:38 p.m., EST)
	2025 January 4		08:28 ST (8:28 a.m., EST)
Vernal Equinox (Sun over equator northward bound)	2024 March 19		23:06 DT (11:06 p.m., EDT)
	2025 March 20		05:01 DT (5:01 a.m., EDT)
Summer Solstice (High sun for Northern Hemisphere)	2024 June 20		16:51 DT (4:51 p.m., EDT)
	2025 June 20		22:42 DT (10:42 p.m., EDT)
Aphelion (Earth farthest from sun)	2024 July 5		01:06 DT (1:06 a.m., EDT)
	2025 July 3		15:55 DT (3:55 p.m., EDT)
Autumnal Equinox (Sun over equator southward bound)	2024 September 22		08:44 DT (8:44 a.m., EDT)
	2025 September 22		14:19 DT (2:19 p.m., EDT)
Winter Solstice (Low sun for Northern Hemisphere)	2024 December 21		04:20 ST (4:20 a.m., EST)
	2025 December 21		10:03 ST (10:03 a.m., EST)

Recently, I asked myself why there was so much inconsistency in the dates when Earth was closest and farthest from the sun, and then I added a few more ideas regarding the solstices and equinoxes. \* The dates and times for the various phenomena in the table change yearly. Discrepancies of time for the solstices and equinoxes are probably the easiest to explain. They depend on the orbital motion of the Earth around the sun. Because the revolution period is nearly constant with a mean remainder of 0.24219 day greater than a year, the Earth's position will fall behind by approximately one-quarter day each 365-day interval, altering the times and the dates when the sun reaches these seasonal transition markers. After four years, we reset the calendar by adding a leap day, February 29. This allows the sun to return to nearly its original position concerning its crossing of the vernal equinox (spring). In addition, we experienced another reset when the leap year occurred in 2000. Century years like 2000 must be divisible by 400 rather than four with no remainder to be given leap year status. \* Examine the dates of the equinoxes and the number of days between the spring and autumnal equinoxes. The period is 187 days. Therefore, the time difference from fall (2023) to spring (2024) would need to be 179 days in a leap year (2024). The two numbers add up to 366 days. Citizens

of the Northern Hemisphere get more summertime than winter, and here is the reason. \* The Earth revolves around the sun in an elliptical orbit, causing the mutual gravitational pulls of the Earth and the sun for each other to vary. Attraction becomes weakest at aphelion, when Earth is farthest from Sol, slowing our planet's orbital motion around the sun. Because aphelion occurs near the summer solstice, this dichotomy of seasonal lengths will be exaggerated for the time interval between spring and fall in the Northern Hemisphere. \* Finally, the dates of perihelion and aphelion vary due to the moon. The Earth and moon orbit every 27.3 days around a common balance point called the Earth-moon barycenter which averages about 2900 miles from the Earth's center. Because perihelion and aphelion are defined by the distance between the sun's center and the Earth's center, the location of Earth with respect to the barycenter greatly affects the time of perihelion and aphelion. The Earth and moon's position regarding the Earth-moon barycenter does not repeat yearly on the same date. This produces what appears to be a quasi-random variation in the dates of perihelion and aphelion (\*adapted from U.S. Naval Observatory literature). An illustration of the barycenter is [here](#). For all who care, Happy Aphelion Day, July 5. Ad Astra!

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 Moravian University Astronomy - [astronomy.org](http://astronomy.org)



# 2024

## Have you renewed your LVAAS membership?

LVAAS PayPal link: [https://www.paypal.com/donate/?hosted\\_button\\_id=FBP8Y5VX5QXNW](https://www.paypal.com/donate/?hosted_button_id=FBP8Y5VX5QXNW)

(remember to add a note with your name, and membership type)

**If your information has changed:**

**Online information update form:** <https://form.jotform.com/233314308714147>

**Printable form:**

[https://lvaas.org/filemgmt\\_data/files/LVAAS\\_Membership\\_Renewal\\_Form.pdf](https://lvaas.org/filemgmt_data/files/LVAAS_Membership_Renewal_Form.pdf)

**Complete instructions:** <https://lvaas.org/page.php?page=Renewing>

**Questions?** email [membership@lvaas.org](mailto:membership@lvaas.org)

**Renewals were due by March 1.**

New members who joined after October 1st are paid up for 2024.

Regular: \$45

Family: \$65

Junior/Student: \$15

Sustaining: \$90

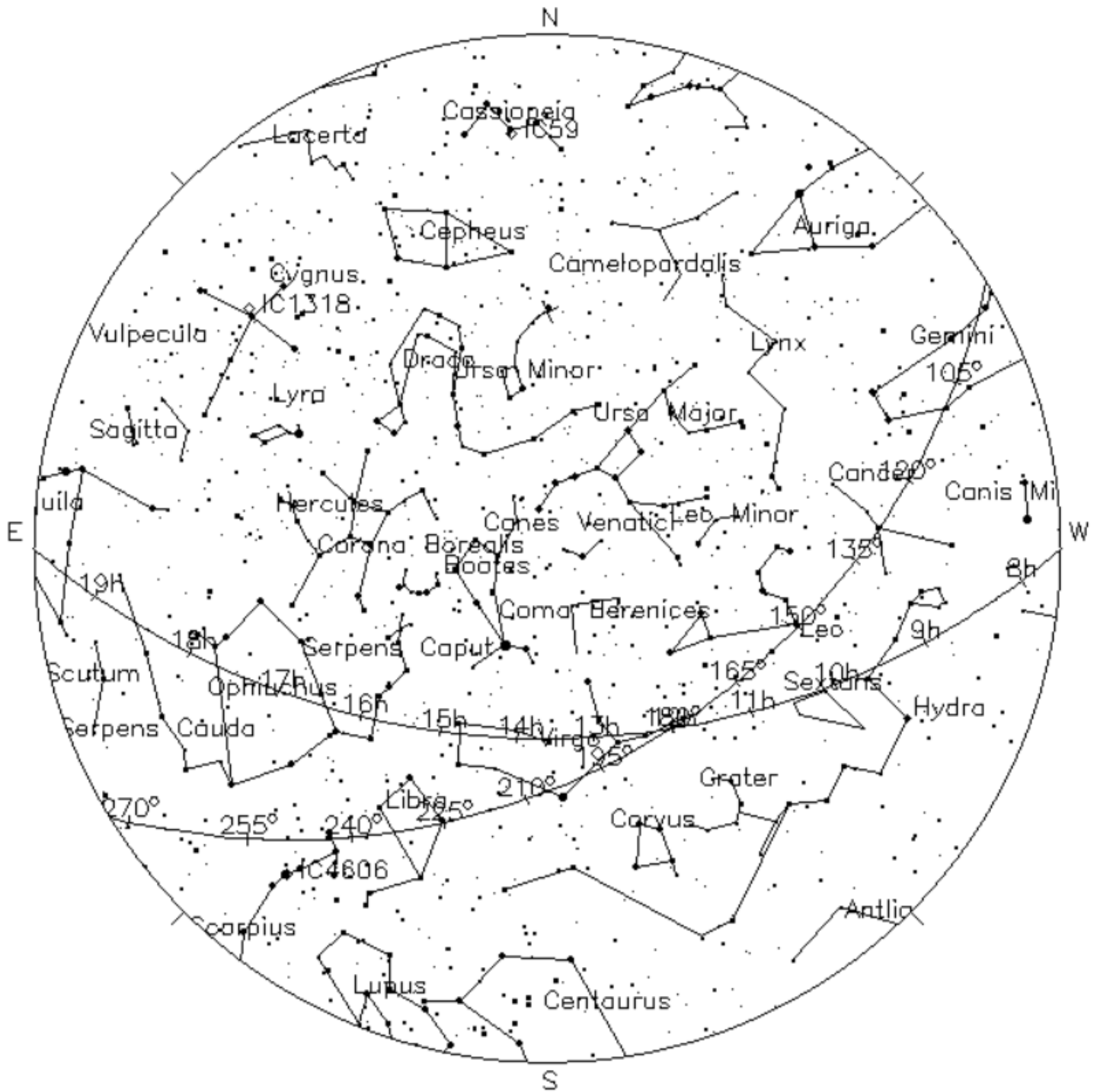
# JULY

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
	01	Adventures in Astronomy 02	03	Independence Day 04	05	06
07	08	Adventures in Astronomy 09	10	11	Stargazers Group Meeting 12	First Quarter Moon 13 General Meeting/Picnic 5:00 PM South Mountain
General Meeting/Picnic 5:00 PM South Mountain (Rain date) 14	15	Adventures in Astronomy 16	17	18	19	Star Party 20
Deadline for submissions to the Observer 21 Full Moon	22	Adventures in Astronomy 23	24	25	26	Last Quarter Moon 27
LVAAS Board of Governors Meeting 28	29	Adventures in Astronomy 30	31			

# AUGUST

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
				Stellafane Convention 01	Stellafane Convention 02	Stellafane Convention 03 Astroimaging Meeting - 7:00 PM
Stellafane Convention 04	05	Adventures in Astronomy 06	07	08	MegaMeet at PR 09 Stargazers Group Meeting	MegaMeet at PR 10 General Meeting 7:00 PM Pulpit Rock
MegaMeet at PR 11 General Meeting 7:00 PM Pulpit Rock (Rain Date)	First Quarter Moon 12	Adventures in Astronomy 13	14	15	Scout Camping 16	Scout Camping 17 Star Party
Scout Camping 18 Deadline for submissions to the Observer	Full Moon 19	Adventures in Astronomy 20	21	22	23	24
LVAAS Board of Governors Meeting 25	Last Quarter Moon 26	Adventures in Astronomy 27	28	29	30	Astroimaging Meeting - 7:00 PM 31

# Sky Above 40°33'58"N 75°26'5"W Monday July 01 2024 00:00 UTC



**Your Sky was implemented** by John Walker in January and February of 1998. The calculation and display software was adapted from Home Planet for Windows. The GIF output file generation is based upon the ppmtogif module of Jef Poskanzer's pbmplus toolkit, of which many other components were used in creating the images you see here.

ppmtogif.c - read a portable pixmap and produce a GIF file

Based on GIFENCOD by David Rowley

Lempel-Zim compression based on "compress"

Modified by Marcel Wijkstra

Copyright © 1989 by Jef Poskanzer.

**Customize Your Sky at** <http://www.fourmilab.ch/yoursky/>

# 2024 LVAAS EVENT CALENDAR

Contributed by Bill Dahlenburg

2024 LVAAS Event Calendar											
	Sundays		Board meeting	Saturday			Observer Submission Deadline	Moon Phase			
	General Meeting time	location		Astro-Imaging	Star Parties	Stargazers Group		New	1 <sup>st</sup>	Full	3 <sup>rd</sup>
January	14	3:00 PM Muhlenberg	28	no meeting	no meeting	no meeting	1/21/24	11	17	25	3
February	4	3:00 PM Muhlenberg	25	no meeting	no meeting	no meeting	2/18/24	9	16	24	2
March	10	3:00 PM Muhlenberg	24	no meeting	16	8	3/17/24	10	17	25	3
April	14	7:00 PM S.M.	28	6	13	12	4/21/24	8	15	23	1
May	5	7:00 PM S.M.	19	11	18	10	5/12/24	7	15	23	1 30
June	9	7:00 PM S.M.	30	1 29	15	14	6/23/24	6	14	21	28
July	13/14	5:00 PM S.M.	28	x	20	12	7/21/24	5	13	21	27
August	10/11	7:00 PM Pulpit	25	3 31	17	9	8/18/24	4	12	19	26
September	8	7:00 PM S.M.	29	x	14	13	9/22/24	2	11	17	24
October	13	7:00 PM S.M.	27	5	12	11	10/20/24	2	10	17	24
November	10	2:00 PM S.M.	24	2	9	8	11/17/24	1	9	15	22
December	8	2:00 PM ?	29	7	no meeting	no meeting	12/22/24	1 30	8	15	22

July, Aug & Dec are Saturday meetings with rain date on Sunday  
 Jan, Feb & March meetings are at Muhlenberg College  
 August meeting is at Pulpit Rock  
 December meeting / Holiday Party (TBD)

NEAF 4/20 - 4/21  
 Mega Meet 8/9 - 8/11  
 CSSP 6/6 - 6/9  
 Stellafane 8/1 - 8/4  
 BFSP

October 4-5-6?



## Publishing images is a balancing act!

When preparing your images for publication in *The Observer*, please consider the following guidelines:

### Put the quality in:

- ▶ Considering the "print" size of the image, make sure you have at least 150 pixels/inch.
- ▶ Use a reasonably good quality for the JPEG compression ratio.

### But watch the "waistline"!

- ▶ Don't go too much above 200 pixels/inch max.
- ▶ Use the lowest JPEG quality that still looks good!
- ▶ Shoot for <300KB for a 1/2 page image or <600KB for a full page.

**Tip:** If you're not Photoshop-savvy, you can re-size and compress undemanding images ("human interest" not astroimages), with an online tool such as:

<https://www.ivertech.com/freeOnlineImageResizer/freeOnlineImageResizer.aspx>. It will also tell you the pixel size and file size of your original, even if you don't download the processed copy.

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Articles submitted prior to the Sunday before the monthly meeting of the board of governors (please see calendar on website) will appear in the upcoming month's issue. Early submissions are greatly appreciated. PDF format is preferred. Articles may be edited for publication. Comments and suggestions are always welcome.

LVAAS members please feel free to submit ads for astronomy equipment you have for sale, and additionally you may sponsor a maximum of three ads from non-members per year. Please submit your finished ad as a PDF, with pictures and text. Every attempt will be made to include submissions in a timely manner.

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If you are interested in becoming a member of LVAAS, please visit our [membership page](#) for information on applying.

Existing members please update your LVAAS profile information by emailing the membership director at [membership@lvaas.org](mailto:membership@lvaas.org).