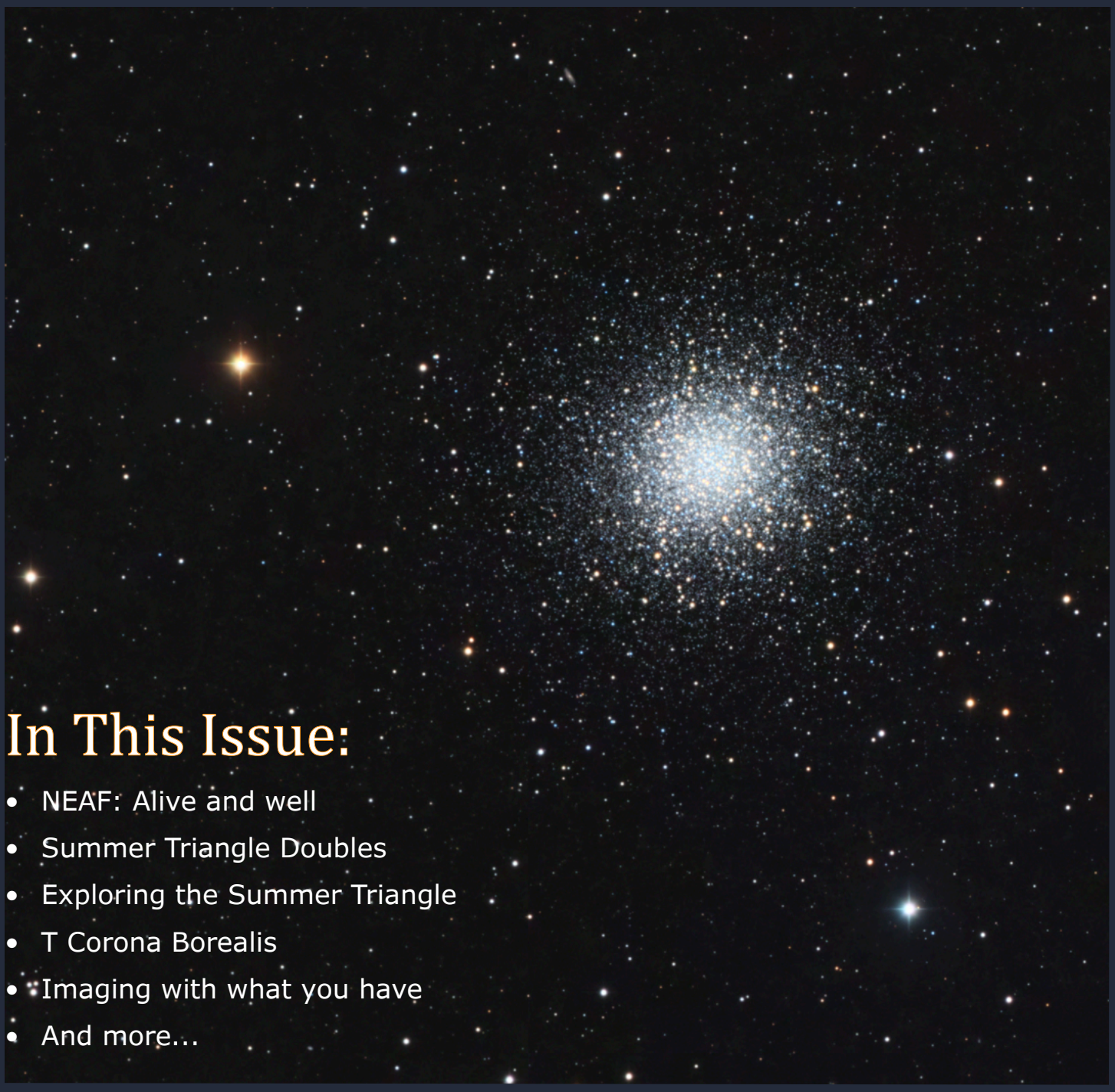
Skyward

May - June 2025 Edition



In This Issue:

In this Issue

Visit our website at http://www.rascmontreal.org/

Visit our YouTube channel RASC Montreal

Visit our Facebook page RASC Montreal Centre

Visit our Facebook discussion group RASC Montreal Centre Group

Check out our X feed RASC Montreal Centre

Cover Image: M13 by Marc Ricard. *Here's my reprocessed image of M13. I used a total of 141 x 180 second dithered LRGB sub-frames captured with my QSI 683 and FSQ 106 EDX XIII at the end of May before the forest fire smoke arrived. I used drizzle integration to enhance the resolution, and a gentle histogram stretch to preserve the propeller.*

Skyward

Newsletter of the
Royal Astronomical Society of Canada
Montreal Centre

SKYWARD is published by *Publications Skyward Enr.* for the Royal Astronomical Society of Canada, Montreal Centre. The Montreal Centre was founded in 1918 and is one of 29 centres across Canada dedicated to the advancement of astronomy. Anyone can become a member by applying on our website at https://rascmontreal.org/join-us/.

Note from the Editor

Hi fellow RASCals.

Another busy couple of months! First off, the library moved. Morrie Portnoff talks about it below. After the move, of course, the opening. We had a full house for our guest speaker, Frank Hughes, who was an astronaut trainer for NASA's Apollo Moon missions. His tales were riveting and many of us are anxiously awaiting his book.

Then, we lost the Honourable Marc Garneau. He once graced us with a talk and Morrie has written a tribute to him. Our intrepid travellers, David Shuman, Paul Simard, Frank Tomaras and Alex Stefanescu decided, despite cautions, to visit NEAF in New York. David tells us all about it and it seems NEAF has regained a great deal of its former glory.

On the observing side, Nicole Laporte suggests Explore the Universe: Doubles in the Summer Triangle. While you're there, Nader Daou highlights other Summer Triangle targets and talks about some of the history of this asterism. Marc Ricard, in a departure from his usual tours, tells us how to spot T Corona Borealis and estimate its brightness if and when it ever blows off its shell. Khoa Tran explains how to get into astrophotography with a camera and static tripod.

JAC student Véronique Djomou is back with an explanation of what defines a planet. Lucas Vieira who is now at Concordia tells us about his project building an astro radio and how he was even awarded a grant for the project. Of course we have David Levy's monthly articles. He talks about Shakespeare and time and three memorable comets.

All this and pics of the Swap Meet, Karl Petruch's upgrade to the Observatory, Astrofest and more.

Did you enjoy this issue? Our contributors appreciate feedback at editor@rascmontreal.org.

Ed.

Word from the President

By Morrie Portnoff, photos by Morrie Portnoff.

Greetings fellow RASCals,

I have been member of the RASC Montreal Centre continuously since September 19, 2011, 14 years. From almost day one, I have been a member of the Centre's Board. However, it is not the reason of this article to mention such a milestone. Over these wonderful years I have been witness to some amazing milestones of our Centre, including the opening of the Bellevue Observatory, the installation of our Meade 14" telescope in the Bellevue Observatory as well as the "Bumblebee" at Wooly Woods, signing the agreement with the Morgan Arboretum/McGill University, hosting way-too-many-to-list amazing speakers and seeing "young" JAC students give their first presentations and then seeing them achieve amazing accomplishments academically. These milestones continue to grace our Centre thanks to our partner, John Abbott College (JAC). When I initially joined the Centre our library was in a shared small classroom in the Hochelaga building. Nothing fancy, but to us it was our library. Eventually building renovations required us to move. Thanks to the generosity of the administration of JAC we were relocated to our current (or rather former current) location. In this location with our partnership with JAC's administration, teachers and students really blossomed. Our library was renamed the I.K. Williamson Library in honour to Isabel K. Williamson, a stalwart member of the days when the Montreal Centre was located next to McGill's Molson Stadium and the observatory there bore her name. Once again, our library is on the move. With each move we have been so lucky to have the support of the JAC community. Over the past weekend, books were moved by a great team of volunteers to our new location in the Anne Marie Edward Building (Room AME-120). Once again, the JAC administration went beyond our wildest dreams by installing new display cabinets in an amazing room which will be a showcase and academic facility to all. Our grand opening was on Monday June 9th with an informal presentation and reception with Frank Hughes, retired NASA Chief of Space Flight Training during the Apollo era. Over the years the Montreal Centre has hosted numerous guest speakers from astronauts (Marc Garneau to name one) to Canadian astronomical icons including our very own David Levy and Terence Dickinson, not to mention innumerable guests from various local and international locations (thanks to ZOOM). This is a testament that we are not just tenants, but in a true partnership with the JAC community, which will continue to evolve.

As always, keep an eye out for more announcements of upcoming events over the next weeks and months. I hope to see you at these events. Feel free to introduce yourself if you are new to the Centre. Don't be shy and you will quickly find out that we are a very welcoming group of friends.

For any member that wishes to help the Board or Executive without the "commitment" you can choose a specific project or event and simply help with one. We always need volunteers for events and special projects. **WARNING:** Volunteering and helping can become habit forming that brings you new friendships and skills. There is no known cure for this ailment.

If anyone has ideas or comments, I am always available. Just send me an email at president@rascmontreal.org or approach me at an event.

As always, I look forward to seeing you at our upcoming events.

Clear Skies as always,

Morrie

(Photo of Isabel Williamson from the RASC website. https://www.rasc.ca/isabel-williamson)

Earl Wyllie, Gerald MacKenzie, Richard Trottier and Nicole Laporte shelving books.

Isabel Williamson, the only person to receive both the Chant Medal (1948) and the Service Award (1981).

Our library's plaque will grace our new location.

Many of our books hold the secrets to obscure celestial objects.

Library Move

Karim Jaffer, Nicole Laporte, Earl Wyllie, Steve Shimizu and Dominique MacKenzie shelving books

Light meal was served at the opening.

NASA Apollo astronaut trainer Frank Hughes recounting his career during the Moon missions.

Roberta Šilerová, Program Dean (Dean of Science/Double DEC/Arts & Sciences/ Pharmacy Tech/Biopharmaceutical Production Tech/Engineering Tech/Computer Science Tech/Information & Library Tech), welcoming us to our new library location in the Anne Marie Edward Science building.

Photos by Daniel Biron, Frank Tomaras

Frank Hughes, NASA Apollo astronaut trainer, guest of honour and speaker.

David Shuman, Frank Hughes, Morrie Portnoff and Karim Jaffer.

Vice-President's Corner

An update on projects and events

By David Shuman, Vice-President

The annual Swap Table event was a success. As usual we ended up with plenty of food and wonderful desert treats. We even ate outdoors under the awning at the Arbo Clubhouse, the weather being perfect. Thanks to all who brought items to eat and items to sell/trade. Many thanks go out to Morrie Portnoff, Nicole Laporte, Nader Daou and Paul Simard for setting up the tables for the snacks and sale/trade items. I hope I didn't miss thanking anyone, it was a true team effort!

I'm scheduling one more Movie Night to make up for the lost evening back in March (due to poor weather). This one's a surprise. A good space-themed, fun movie and a bonus featurette 16mm film, Saturday June 14th.

Public Events, Outreach, Inreach

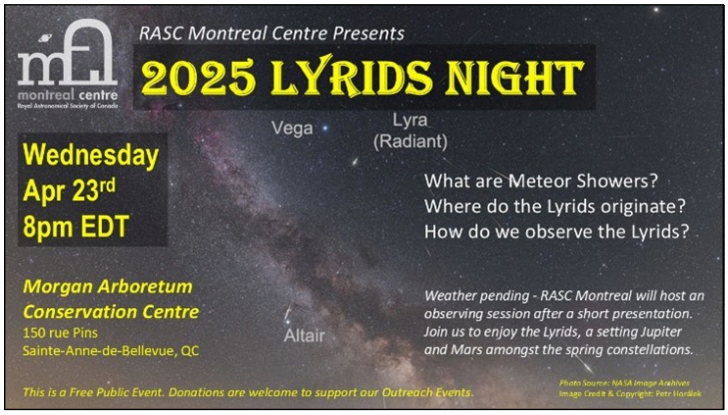
***Karim Jaffer**, Coordinator - Public Events*
***Nader Daou**, Director of Outreach*

Recent Events

On April 11th we held our first event at Dawson College to support the new student club, the Dawson Astronomical Society. We had a great turnout of our RASC members, JAC students and public audience to join the Dawson students for this talk by iREx speaker: Dr. Clémence Fontanive. Our RASC table was a hub of discussion after the talk – thanks to Morrie Potnoff, Nader Daou, David Shuman and Paul Simard for continuing the discussion into the early evening hours.

https://www.youtube.com/watch?v=qHMDuDlAqJc

This year we decided to have an event for the spring ***Lyrids meteor shower***, with first time presenter Lily Donnelly, JAC Astro graduating student, giving a short presentation to inform the audience about Nature's fireworks. An pleasant night under a humid night sky was enjoyed by over 60 participants, and while we didn't get to see any Lyrids the audience did enjoy views of Jupiter, Mars and some deep sky objects.



International Astronomy Day this year was celebrated on Saturday, May 3rd with both a local Montreal and a National RASC event. On the local side the event began with our former Board member Dr. Russell Fralich giving a talk about his aurora chasing adventures in the spring. This talk was followed by an evening of observing on the field, including views of the waxing Moon and sights through the Bellevue Observatory telescope.

On the National level we had a LiveStream featuring drop-ins to a dozen Centres across the country, plus speakers and discussion by RASC members and our Explore Scientific co-host Scott Roberts, who flew into Toronto to run this event with me in my role as the national RASC EPO Chair (Education and Public Outreach). Our Montreal Centre segment was in the dark, but still appreciated by a large live and recorded audience.

https://youtu.be/2MlgQap7eqM

In June we had our annual AstroFest hosted by the Rio Tinto Alcan Planetarium on June 7 & 8 with the RASC Montreal Centre participation coordinated by our Outreach Director Nader Daou.

On Wed, June 11th RASC Montreal hosted RASC Victoria youth member and author Nathan Hellner-Mestelman. Nathan is an outstanding science communicator at a young age, still completing high school. In addition to this book, which follows his debut book — *Cosmic Wonder*, Nathan also produced a documentary short — *Universe Versus You* and a web comic — *Nerd Anomaly*, also published in SkyNews and *Sky's Up* magazines...as well as being an active volunteer in his RASC Centre, active at his school and during COVID joined with other youth across the world to create an online club: *the Cosmic Generation*. In our Public Event Nathan shared his journey through the ***Language of the Stars***.

https://youtu.be/h55WJPpizDg

Upcoming Public Events

On Wed, Aug 13th RASC Montreal will hold the annual Papacosmas Perseids Meteor Shower Event at the Morgan Arboretum.

On Sat, Sept 6th join RASC Montreal at John Abbott College for our 2025 Keynote Public Townsend Lecture, featuring Dr. Lisa Dang to speak about characterizing exoplanet atmospheres. This event will include a light reception with the speaker before the Public Talk.

Stay tuned to Explore Scientific and our RASC Montreal Facebook page for summer Global Star Parties on YouTube and other online platforms. Any RASC members interested in sharing their observing journeys, images, and projects (including citizen science initiatives) can contact me to present at one of these GSPs: publicevents@rascmontreal.org

RASC Montreal is looking for Public Events volunteers to help coordinate events and identify future speakers and topics.

If you're interested, please email: publicevents@rascmontreal.org or outreach@rascmontreal.org.

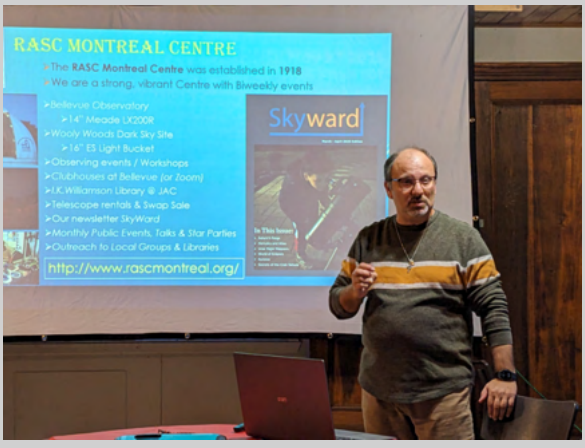
Consult the website at https://rascmontreal.org/our-calendar/ and watch your email for the following events. Some may be weather dependant.

Saturday ***June 28th***, 9:30, Members Observing at Wooly Woods,

- Wednesday ***July 4th***, 20:00, Morgan Arboretum, Explore the Universe: Sagittarius DSOs with Nicole Laporte.
- Saturday ***July 5th***, Members observing at Thompson Park.
- Saturday ***July 19th***, Members observing at Wooly Woods.
- Saturday ***July 26th,*** Members observing at Wooly Woods.
- Saturday ***August 2nd,*** Members observing at Thompson Park.
- Saturday ***August 9th,*** 19:00, Members Clubhouse, Morgan Arboretum.
- Saturday ***August 16th,*** Members observing at Wooly Woods.
- Saturday ***August 23rd,*** Members observing at Wooly Woods.
- Saturday ***August 30th,*** Members observing at Thompson Park.

Detlev Schmallhaus at the controls of the Observatory.

Public night at the Arbo.



Nader Daou explaining the advantages of membershipof the Montreal Centre.

Photos by Daniel Biron.

New Members

Please join us in welcoming these new members:

Terry Mann ***Sherief Sadek***

Next Issue

Got something to publish in the next issue of Skyward? We welcome contributions from Montreal Centre members. Send them to editor@rascmontreal.org before August 1st. A reminder will be mailed July 20th. Publication will be in the last week of June.

We are always looking for:

- **Articles**
- **Pictures of recent events**
- **Reviews of Books, equipment, videos, etc.**
- **Astro-images or drawings**
- **Observation logs**
- **Items for sale/wanted**

Guidelines:

- **Text should preferably be in Word with images shown where they go. However, send separate copies of images since Word tends to reduce resolution.**
- **Aim for image resolution of at least 300dpi at the size the image will be used on the letter sized page.**
- **Send a head shot to include with your article.**
- **Original work only. Do not infringe copyrights.**
- **If you include images that are freely usable, such as SkySafari or NASA, cite the references.**
- **Unless you instruct me otherwise, I will use images posted on our Facebook Group.**

By Russell Fralich. My photo of the 1st quarter moon tinged with smoke from the prairie forest fires.
I took it with my OM-5, handheld with a 150 mm telephoto lens.

Karl Petruch installing the new mini computer on the mount of Observatory telescope. Now we will be able to project images on a screen outside the Observatory. Photos by Frank Tomaras.

Recent Swap Meet & Potluck Supper at the Arbo Clubhouse. Photos by Frank Tomaras.

ASTROFEST
LA VIE EN ROUGE

Photos by Russell Fralich.

Hon. Marc Garneau

February 29, 1949 - June 4, 2025

On June 4th, 2025 Canada became poorer as we lost a true gentleman who was role model and inspiration to all Canadians and especially to students in STEAM streams of education encouraging them to pursue their dreams and ambitions. Marc Garneau, was Canada's first astronaut serving on the STS-41-G mission and went on to crew two additional space missions (STS-77 and STS-97). Following his career as an astronaut, Marc Garneau served as the President of the Canadian Space Agency. Not ready to leave the call of service to the Canadian people, Marc Garneau entered the federal political arena as a MP for the riding of Westmount for 14½ years and was appointed as the Transport Minister.

It was during his tenure as a member of parliament when the Liberals were the official opposition that Marc graced the Montreal Centre as our Townsend Lecturer (August 8, 2014). This event was held in the majestic Victoria Hall of Westmount. It was during this event and others at Westmount, such as Earth Hour, that Marc Garneau showed how personable he was toward the public. He was always there greeting people with a smile and words of wisdom and encouragement to the young and not so young.

The Honourable Marc Garneau will always hold a special place in the history of the Montreal Centre.

STS-97 Crew Photograph (Credit: NASA).

STS-77 Crew (Credit NASA).

The Board and Executive of the Montreal Centre with Marc Garneau.

Marc Garneau giving words of wisdom.

Young and old during the meet and greet with Marc Garneau.

Marc Garneau enthralling the audience with his tales of adventure as a Canadian astronaut.

Chasing Auroras. Russell fralich gave a talk at the Arbo Clubhouse recounting his trip to Churchill Manitoba to see Auroras and polar bears. Photos by Frank Tomaras.

NEAF: Alive and Well

By David Shuman, Photos by Paul Simard.

Paul Simard, Alex Stefanescu, Detlev Schmallhaus, Frank Tomaras, Bill Strople and others have been attending NEAF for the better part of two decades.

Both Paul and myself have even been exhibitors at NEAF several times. We showcased our “Journeys on Mars 3-D” mini-doc with a sponsorship for the 3-D glasses from Astronomics. Most recently, we presented our “ShadowChasers” eclipse documentary at NEAF 2023.

For those that are not familiar, **NEAF**, or **N**orth **E**ast **A**stronomy **F**orum, is a gathering of guest speakers, exhibitiors and vendors from around the world displaying the latest and greatest tools for both visual astronomy and astrophotography. Even items that are not quite available to the public are showcased at NEAF. If something major is coming out, say a new line of eyepieces, most companies wait to unveil it at NEAF.

Traditionally this event takes place in early to mid-April at a local college gymnasium in the town of Suffern, NY.

Why Suffern? Well, there is a certain eyepiece designer/manufacturer that happens to have its origins in Suffern, NY. If you haven’t guessed already, it’s Tele Vue.

So along with Tele Vue and dozens of other companies, clubs and organizations, NEAF takes up a good part of the gymnasium floor.

This is an astro equipment heaven! Can you imaging being one of the very first to look through prototype telescopes, a new eyepiece. Or simply meeting up with amateur and professional astronomers, educators and company presidents from around the world?

I’ve spoken with Al and David Nagler from Tele Vue, Scott Roberts from Explore Scientific, and the multitude from William Optics, ZWO, Celestron, iOptron, Lunt & Daystar and others over the years.

Then….

COVID!

As public gatherings were banned for a few years, and mind you, just before that, back in April 2020, the largest contingent of RASCALs ever was scheduled to go to NEAF. Alas NEAF was no more, only an on-line version of it is all we had left.

So it was with curiosity that we travelled again in 2023 for NEAF, wondering how things were after the effects of the pandemic. Would the crowds be back? The vendors? Old Friends? After attending, Paul, Alex

and I did enjoy ourselves, however there was a marked decline in attendance, vendors and even new product announcements.

For us, this almost annual ritual is a mini vacation. We not only attend the two days of the convention, but take mini trips to Manhattan, visiting BH Photo (the largest camera store in the world, worth the trip by itself if you like photographic and imaging equipment). We have some fun meals and I get to meet up with my cousin. (I have a cousin in New Jersey most of my family is American.)

So, we didn't know what to think, was this the end for us, travelling for an extended weekend to NEAF?

It's a scenic, 5-6 hour drive through the Adirondacks and Catskills, just shy of the Jersey Turnpike. It's not too long of a trip, but when you factor in the fuel, food, admission tickets for the two days and of course, the items that we inevitably buy (more on that soon)...

Last year there was the eclipse, many, like us were too preoccupied to attend NEAF. We decided to try for this year.

Then, another issue, the new concern of travelling to the US, stories of Canadians not being welcome or turned away at the border and a very unfavourable exchange rate. Should we even go?

We figured we'd take a chance once more. I do have family in NJ, and always like meeting up with my cousin whenever I have the possibility.

So, Paul, Alex, Frank and I went in two cars. It was rainy, too bad as there would be no solar star party with a usual collection of weird H-alpha, Sodium-D and Calcium-K scopes to look through. If you've ever looked through a 90mm double stacked H-alpha scope, you know what I mean.

However, it was fantastic. Not only were there exhibits in full display, Tele Vue had NEW items that were showcased along with their usual "blem" eyepieces sale – significant discounts for good eyepieces that may have only a cosmetic blemish. Even a new surprise that we only found out that Saturday morning — the Delos 2", 24mm eyepiece coming this Christmas.

This time there were two store vendors (there was only one last time) so, more choices, and competitive prices.

NEAF used to be a dreamland for purchases, as we are allowed to bring back 800$ CDN for 48+ hour stay. So, no shipping, or duties to worry about.

The day was peppered with fantastic talks, from former Shuttle Astronauts Eileen Collins and Robert "Hoot" Gibson, to leaders in cutting edge Astronomical sciences Jamie Rankin-Voyager's 45, Sara Seager-MIT and many others.

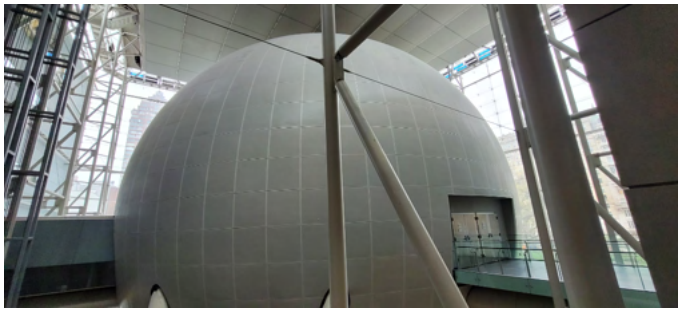
Al Nagler was even presented with a Lifetime Achievement Award (see picture on next page). Just meeting with people such as Frank Hughes who worked on training the Apollo Astronauts and will be giving us a

Many new vendors were there as well, some from Europe and some from Canada!Sunday was equally busy with a last chance to pick up one or two items before going home.

visit in June at our new Library Opening Night, or Jean Wright “Sew Sisters” who worked on the Space Shuttle’s Thermal blankets was awesome.

We returned Tuesday, no issues at the border. As a matter of fact, going to the US was easy as there were no usual lineups, a few questions, and that was it. Many people at the show when finding out we were Canadian, actually apologized for what was occurring and said they were glad we made it. We went to enjoy Astronomy, equipment, talks and have a good time with friends.

So, is NEAF Alive and Well? -*YES!*



On the rainy Monday, we traveled to the Hayden Planetarium and visited BH Photo.

Explore the Universe: Summer Triangle Doubles

***By Nicole Laporte**, Director membership liaison*

To the delight of many stargazers, the Summer Triangle rises higher in the night sky as the weather warms. The trio of Vega, Deneb and Altair are useful signposts for star hopping and navigating the summer night sky.

Double stars are good observing targets that offer colorful sights and are easy to sketch. If you can draw a dot, you can record your observations of double stars through sketches.

Bright and wide double stars that are visible with binoculars and located near the Summer Triangle are part of the RASC Explore the Universe Observing Program target list which includes:

- Lyra: **Epsilon, Zeta, and Delta**
- Cygnus: **Alberio and Omicron**

Image source: Stellarium-web.org

Colour and Double Stars

The colour of the stars is affected by several factors, such as:

- Wildfire smoke
- Humidity
- Position relative to the horizon

The wildfire season has already begun for 2025 and information on conditions can be found at Bellevue Observatory Clear Sky Chart that has links to smoke maps, when the Montreal region is affected by wildfire smoke.

Humidity, which can be high during the summer months, also impacts the colour of stars. The stars that are low in the sky will be more affected by humidity, because the light from the stars must travel through a thicker layer of atmosphere.

Colour perception varies from one person to another. Two people observing on the same evening in the same location may perceive different colours when viewing the same star. The colour of the stars mentioned in this article are the ones perceived by the author, but you may perceive different colours, especially during wildfire season.

Lyra

The constellation Lyra "The Harp" contains three bright double stars near Vega at one point of the Summer Triangle.

Epsilon Lyra is often referred to as the **Double-Double**, because each double star is a double star. The two drawings of the double and the double-double are a good example of how magnification dims the view at the eyepiece.

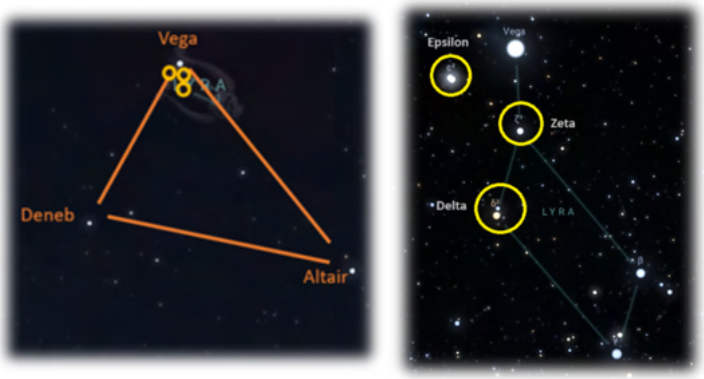


Image source: Stellarium-web.org

Refractor View

Epsilon Lyra 114x *Epsilon Lyra 225x*

These drawings are recordings from observations on the same evening with the same telescope, a 90mm, 910 mm FL achromatic refractor. The drawing of the double-double at 225x magnification is quite dim as the 90mm refractor was pushed beyond the recommended limit of 180x magnification.

Zeta Lyra - Refractor 114x

Zeta Lyra is located below bright Vega. The double star has a beautiful colour contrast with a main yellow at magnitude of 4.3 and pale green companion with a magnitude of 5.6. The two stars are separated by 44" which can be separated with binoculars.

In the *RASC Observer's Handbook Table of Coloured Double Stars* Zeta has a subjective rating of **!! Beautiful**.

Delta Lyra - Refractor 38x

Delta Lyra is a very wide and colourful double star. The two stars are an optical double, meaning that they do not orbit each other, but are aligned with one another when viewed from Earth.

The brighter star is yellow with a magnitude 4.5 and the dimmer star is blue with a magnitude 5.6. The separation is 630", which makes it a good binocular double.

Cygnus

The constellation Cygnus is high overhead in the summer. The bright stars in the constellation draw out a long-necked swan flying overhead that is easily recognizable in the summer sky.

The tail of the swan is the star Deneb, one of the three stars of the summer triangle.

Image source: Stellarium-web.org

Albirio - Refractor 101x

Albireo is the head of the swan and a favourite double star of many stargazers. In the *RASC Observer's Handbook Table of Coloured Double Stars* Albireo has the highest subjective rating of **!!! Very Beautiful**.

The main star is a brilliant yellow with a magnitude of 3.1 and the companion star is a dazzling blue with a magnitude of 5.1. The stars can be separated at low magnification, since they are 35" apart.

Albireo is at the limit of binoculars viewing. Preferably the binoculars are mounted on a tripod and the observing conditions need to be ideal with low humidity.

Omicron Cygnus - Refractor 45x

Omicron Cygnus is located at the base of the swan's wing, nearest to Vega. The colourful triple star is in the shape of a hockey stick. The main star is orange and has a magnitude of 3.8, while its blue companion has a magnitude of 7.7. The white star that completes the trio is Cygnus 30 at a magnitude of 4.8. This trio is wide and a good binocular target.

The celestial hockey stick has a beauty rating of **!! – Beautiful**, in the *RASC Observer's Handbook Table of Coloured Double Stars.*

Double stargazing in the Summer Triangle offers colourful views of the night sky and an easy introduction to astronomical sketching. Even in less than ideal conditions, such as suburban skies or a gibbous moon, all you need is a pair of binoculars or a small telescope to enjoy the celestial wonders above.

Return of the Summer Triangle

By Nader Daou, Director of Outreach

History and Utility in the Modern Sky

The Summer Triangle is a remarkable pattern that appears high above the eastern horizon after dusk every year as the Northern Hemisphere tilts toward summer. The asterism, which consists of the bright stars Vega in Lyra, Deneb in Cygnus, and Altair in Aquila, is a useful and symbolic component of both cultural astronomy and skywatching. It is not a constellation in and of itself.

A Contemporary Light with Historical Foundations

Its constituent stars have long had cultural significance, even though the term "Summer Triangle" was made popular in the 20th century — often credited to H.A. Rey and later supported by writers like Patrick Moore.

Around 12,000 BCE, axial precession made Vega, one of the brightest stars in the northern sky, the Pole Star. Vega appears in the romantic legend of the Weaver Girl in ancient Chinese mythology. The Milky Way, a celestial river, separates Vega from her lover, Altair. According to Arabic astronomical traditions, Deneb, which represents the tail of the celestial swan Cygnus, is known as "Dhanab al DajŌjah" (tail of the hen).

Native American Sky Traditions

The Summer Triangle's stars are incorporated into seasonal tales and survival skills in a number of First Nations and Indigenous cultures. The area of the sky that includes the Summer Triangle is located along the Jiibay Ziibi, or "River of Souls," as the Milky Way is known to the Anishinaabe (Ojibwe) people. The journey that spirits take after passing away is symbolized by this cosmic river. In this spiritual geography, Deneb and the nearby stars are connected to souls travelling northward.

The time of specific ceremonies and animal movements are indicated by the stars in this area for the Blackfoot. A change in seasonal patterns, such as when to start moving camps in anticipation of the summer buffalo hunts, was signalled by the return of the Summer Triangle high in the night sky.

According to the Lakota, Vega (Wanagi Ta'canku) is a part of a sky path connected to spirits and ancestors' memories. The unity of earth, sky, and ancestral knowledge is symbolized by the shape of the Summer Triangle, which is sometimes seen as a sacred tipi.

Crucially, many of these tales are dynamic cultural frameworks connected to oral tradition, cyclical time, and lived experience on the land rather than static "constellations" in the Western sense.

Orientation in the Summer Sky

The Summer Triangle dominates the evening sky from late May to September in the Northern Hemisphere and provides a great framework for public outreach, structured observational learning, and celestial navigation.

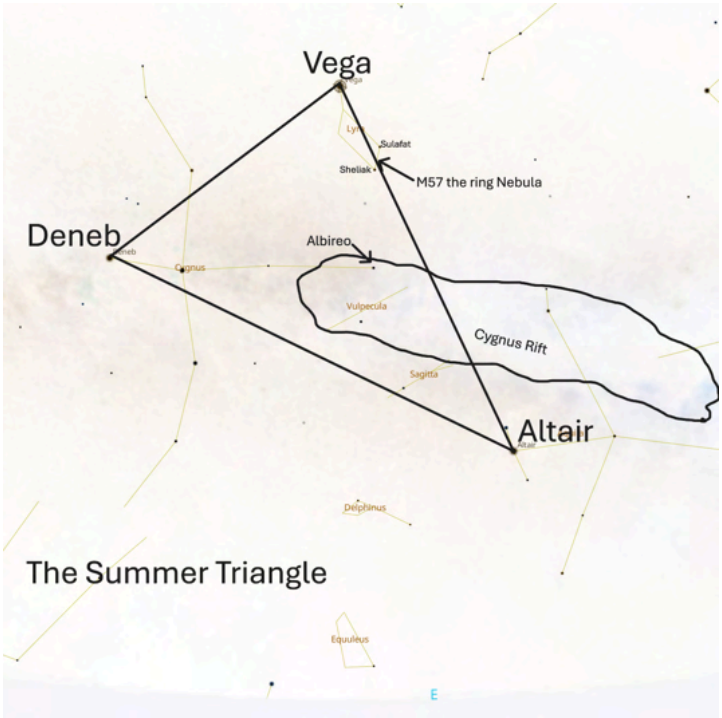
Approximately 30° of sky is covered by the large, easily recognizable triangle formed by these three first-magnitude stars; it is wide enough to cover the width of your outstretched hand at arm's length. They can be seen from most inhabited latitudes (even dense urban light polluted areas) because of their brightness and proximity to the celestial equator.

Detailed Instructions for Observation

1. Finding the Triangle: The Order of Ascent
   Altair starts to rise low in the east-southeast at around 10 PM in late May. Soon after, Vega shines close to the zenith by the middle of June. Deneb trails, rising a little later and farther north.
   All three stars are clearly visible high in the eastern sky shortly after twilight by the middle of July.

2. Recognizing the Triangle: Stars and Shape
   Altair: A bright star that forms a line with two fainter stars, Tarazed and Alshain, on either side. Turn your gaze to the southeast. Vega: During July and August, this bright, bluish-white star is almost overhead. Deneb: Identifies the tail of the Northern Cross in Cygnus; bright, but a little fainter than the other two. (see chart below)

To identify the asterism, draw an imaginary triangle that joins these three. Deneb to Altair is more north-south, while Vega to Deneb is approximately east-west.



Courtesy Stellarium

Deep Sky and Triangle Structural Features

A. The Milky Way Through the Triangle

Under dark skies, the Milky Way appears as a band of mist. It passes through Deneb and Altair. It is best viewed on moonless nights, far from light polluted areas.

Use 7x50 to 10x50 binoculars to look along the band:

Thousands of unresolved (cannot be seen as individual) stars can be seen as star clouds, particularly in Cygnus and Aquila. As interstellar dust clouds block out background starlight, dark rifts — most notably the Cygnus Rift — appear as dramatic divisions within the Milky Way.

B. Albireo: The Swan's Beak double star

Location: RA 19^h 30^m, Dec +27°. Situated close to the centre of the line joining Altair with Vega, at the "head" of Cygnus, Albireo (bet01 and bet02 Cygni) are separated by about 34 arcseconds and appears as a stunning gold-and-blue double star when viewed through binoculars.

C. The Ring Nebula (M57)

M57, the Ring Nebula, is in constellation Lyra (the one with Vega). It lies between Sheliak and Sulafat, the two stars in Lyra's parallelogram, just where the imaginary line joining Altair with Vega intersects the constellation. Under clear skies, the ring shape can be resolved with small telescopes at medium to high magnification. Photographically, it is a vivid blue-green, but in real life, it looks like a smoky grey doughnut with no colour.

To find M57, Locate Vega and proceed to the Lyra parallelogram. Line up the telescope (through a finder or a Telrad) halfway between Sulafat (γ Lyrae) and Sheliak (β Lyrae).

Table of targets

Feature	Type	Visibility	Instrument
Vega	Star (A0V)	Naked eye	–
Altair	Star (A7V)	Naked eye	–
Deneb	Star (B2 Ia)	Naked eye	–
Milky Way	Galactic feature	Naked eye/Binoculars	Dark skies required
Albireo	Double star	Binocular/Telescope	Colour contrast
M57 (Ring Nebula)	Planetary Nebula	Telescope (>80mm aperture)	High power needed
Cygnus Rift	Dark nebula	Binoculars/Naked eye	Low power, wide FOV

A Legacy of Navigation from Sextants to Satellites

GPS and the magnetic compass are millennia behind celestial navigation. Seafaring societies like the Polynesians codified the use of stars to determine latitude and direction, and Islamic and European navigators later refined this technique.

Mariners were able to determine how high celestial bodies were above the horizon by using quadrants, astrolabes, and, later, sextants. Stars like Vega and Altair were important reference points when Polaris was absent in the southern hemisphere or when it was below the horizon.

Although they are rarely used in actual navigation today, historical tools like sextants are still utilized in maritime training and as backup systems on certain military ships. The concepts underlying these instruments are frequently repurposed by amateur astronomers for instructional demonstrations or to link historical and contemporary methods. Furthermore, the foundations of astrometry, which is the accurate determination of star positions, are still based on these same angular principles, although they are currently carried out with sub-milliarcsecond precision by missions such as Gaia.

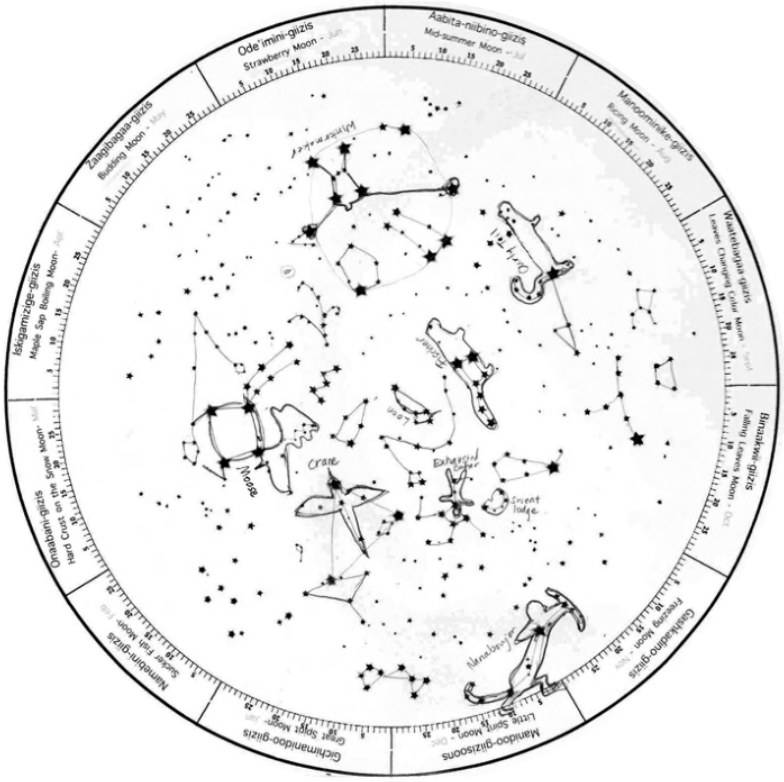
Science and Sky Lore Collide

Observational astronomy gains a human element when one is aware of the cultural stories that surround the stars. Myths about the Summer Triangle are found throughout the Americas, not just in East Asian customs. Seasonal sky watching has long influenced agricultural cycles, migration, and ceremonial timing among the Haudenosaunee, Cree, and Diné peoples.

A comprehensive approach to sky education is provided by presenting these myths alongside useful sky knowledge. We promote a more inclusive view of the sky by integrating scientific and cultural astronomy, highlighting the fact that people from many cultures have long gazed up at the sky with both wonder and wisdom.

In conclusion

An ancient and contemporary pattern, the Summer Triangle recurs annually as a celestial keystone. It is more than just an asterism to educators, observers, and navigators; it is a gateway to scientific practice, cultural heritage, and knowledge of the sky.
Vega, Deneb, and Altair continue to guide the way—toward wonder and comprehension—whether they are marked with a sextant over open waters or traced by the eye from a dark-sky location.

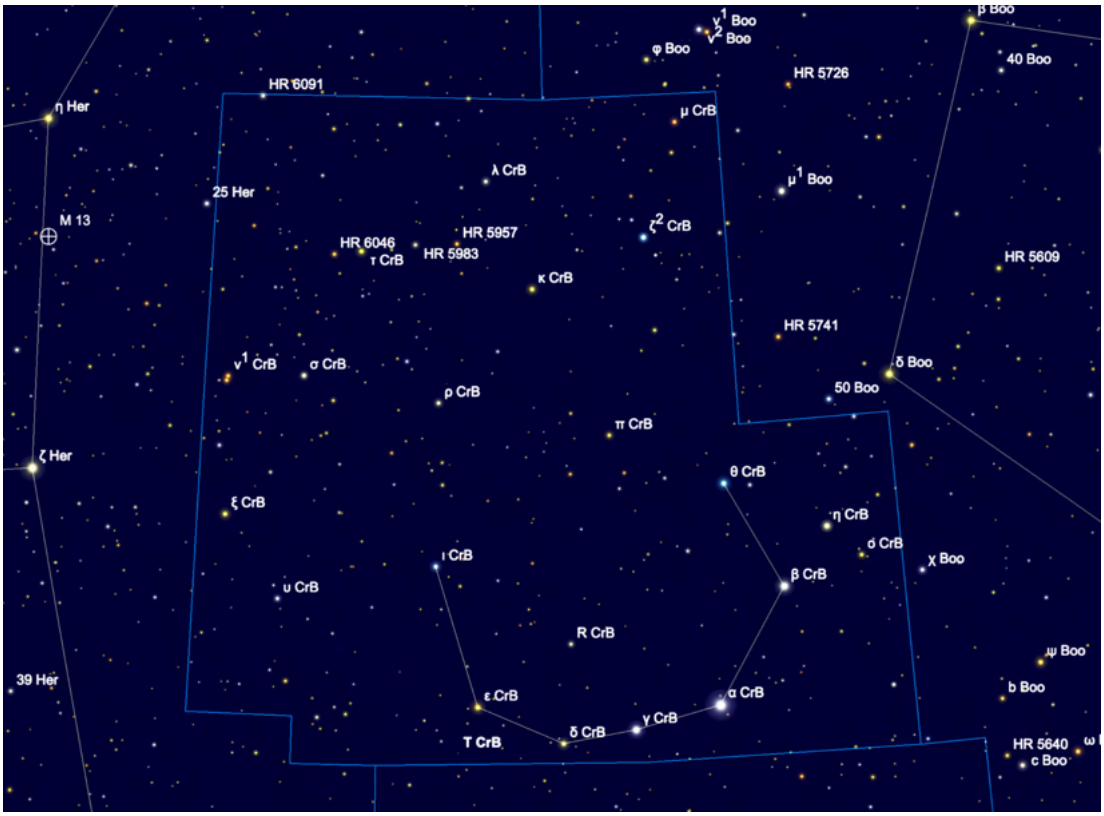


Lee, Annette. (2020). Ojibwe Giizhiig Anung Masinaaigan and D(L)akota Makoce Wicanhpi Wowapi: Revitalization of Native American Star Knowledge, A Community Effort. 10.48550/ arXiv.2008.08224.

T Corona Borealis

By: Marc Ricard

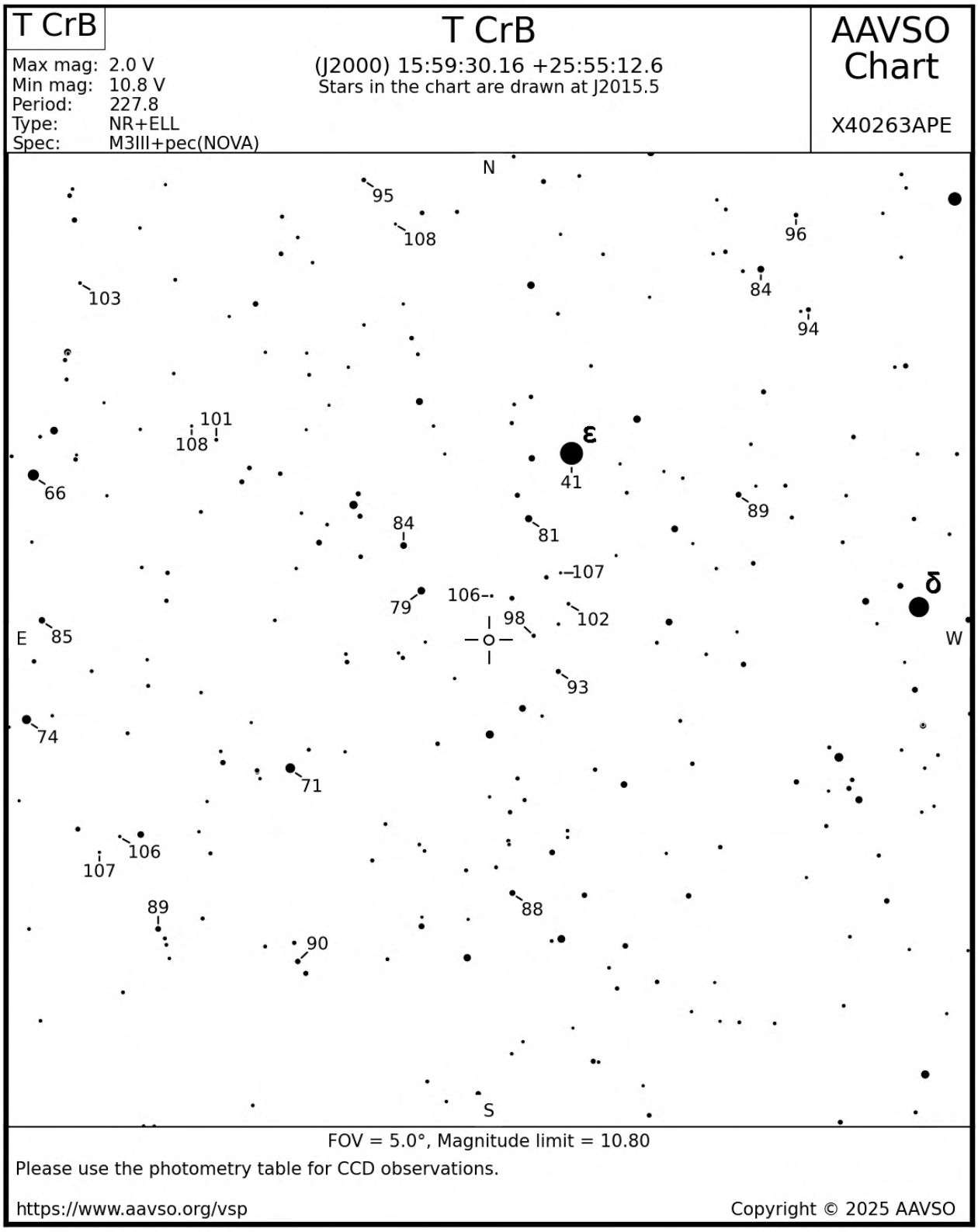
Corona Borealis is an attractive, little semi-circle of stars riding high overhead, in between Bootes and Hercules during the warm summer months. However, only mag 2.2 Alphecca (α Corona Borealis) may be visible if you observe under light-polluted skies. Look for it between the two bright stars Vega and Arcturus, approximately a third of the way toward Arcturus. In classical mythology, Corona Borealis represents the crown given by the god Dionysus to Princess Ariadne and set by her in the heavens. In Cree tradition, Corona Borealis represents a sweat lodge. There are no star clusters or nebulae plotted within the 179 square degrees of this diminutive constellation, but one of its variable stars is set to put on a once-in-a-lifetime show.



Corona Borealis finder chart courtesy of Sky Safari Pro.

One degree south-south-east of ε (epsilon), the recurrent nova T Corona Borealis is getting ready to erupt. It's predicted soon to reach magnitude 2, rivalling Alphecca (α) as it did in 1866 and 1946. It's currently shining at magnitude 10.4 as I write this article, just within reach of my mounted 16x70 mm binoculars. I've annotated the two bright stars on the AAVSO finder chart on the next page to help you locate the Blaze star.

I suggest you print this AAVSO chart and illuminate it with a dim red flashlight to preserve your dark adaptation. Start by rotating the chart to match the view through your telescope's finder or binoculars. Use the cardinal marks on the edges of the chart as a guide.

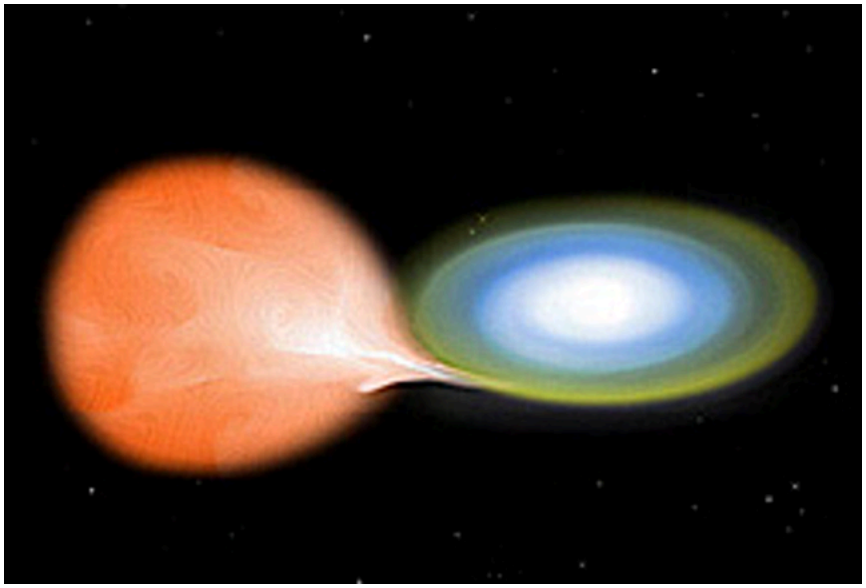


T CrB may be quite dim and difficult to identify amongst the other field stars in your instrument, so start by locating the brighter mag 7.9 and 8.4 comparison stars nearby. The decimal points have been omitted to avoid confusion. If T CrB appears dimmer than mag 7.9, then compare it to the mag 8.1 star. If that star is too bright, then compare it to the mag 8.4 star. Continue in this way until you find a star that is as close as possible to T CrB's current brightness. Ideally, interpolate your estimate by using a slightly brighter comparison star and a slightly fainter one. Take quick glances and avoid staring, then make a note of its brightness and observe it again on the next clear night. With practice, you'll remember the location of the comparison stars and estimating T CrB will become easy. You can compare your measure with those of fellow variable stars observers on the AAVSO website. If you would like to submit your observation to the AAVSO, simply fill out the registration form and request an observer code. You don't need to be a member to do so.

Irish astronomer John Birmingham was the first to spot it when it erupted in 1866. In a letter to fellow astronomer William Huggins, he wrote:

> "I was on the road when I first saw the star, so I could not be sure of the time to a minute, but it was certainly between 11h 30m and 11h 45m on the night of the 12th… In size, it was at least equal to α Coronae and decidedly more brilliant… In colour, the star appeared nearly white with a bluish tinge."

The rise must have been quite sudden, as Johann Schmidt, the director of the Athens Observatory, had been observing the constellation a few hours before and saw nothing unusual. He estimated its magnitude as 2.5 on the following night and noted that its brightness diminished by half a magnitude a day over the next several days, but the decrease became much less rapid by the end of May. Astronomers soon realized that T CrB had been catalogued as *+26°2765, m 9.5* in Friedrich Argelander's Durchmusterung. This was the first well-observed nova eruption. As Dr Bard Schaefer recounts in his YouTube webinar, "**Recurrent Nova T CrB Coming Soon to a Sky Near You**!", astronomers had no idea what could cause the star to brighten as much as it did. Some even speculated that a meteor storm might have fallen into the star.



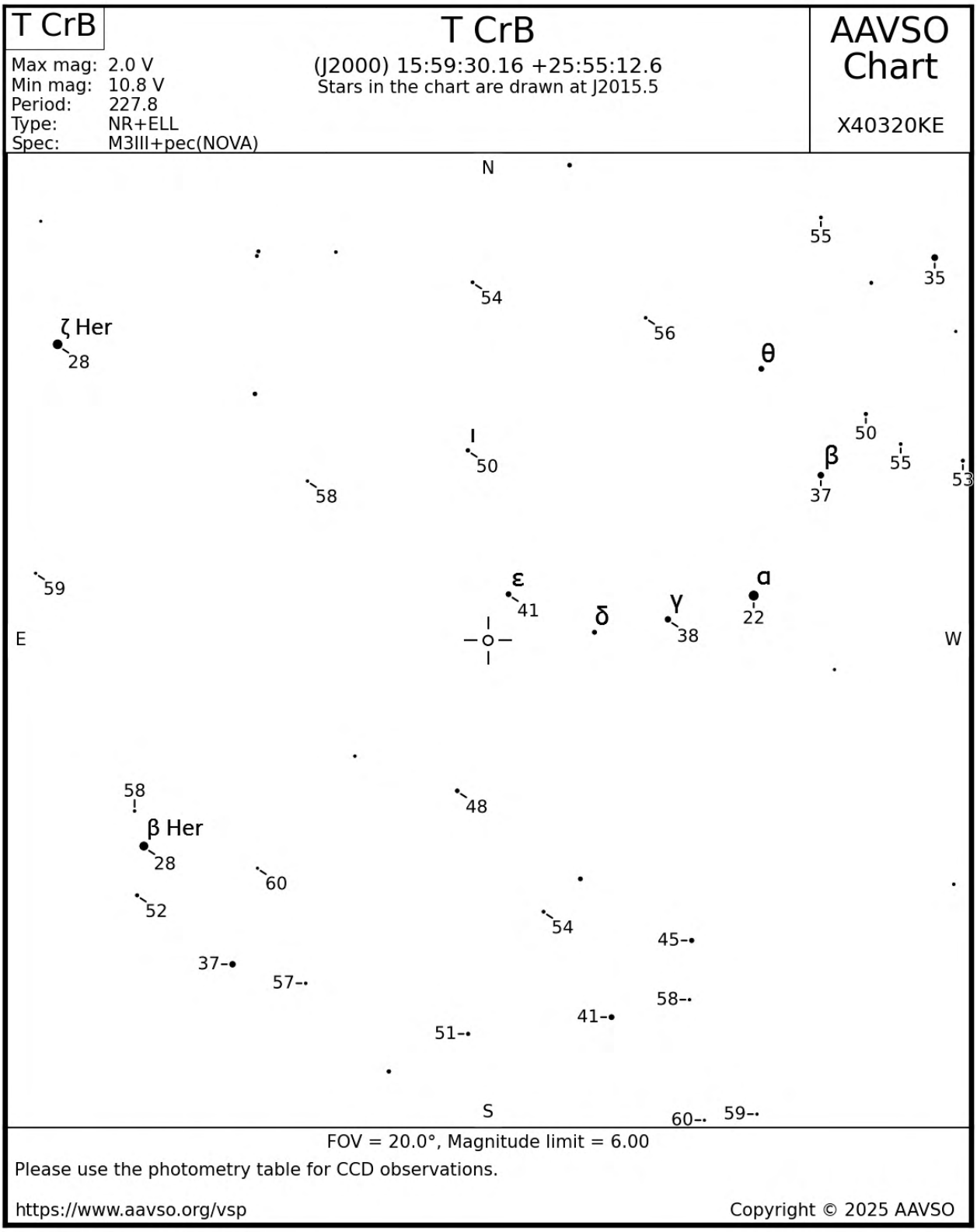
Artist's conception of a white dwarf accreting hydrogen from the Roche lobe of its larger companion star

The modern concept of novae developed only in the early 1900s. Typically, they're composed of a red giant closely orbiting a white dwarf star. A recent study by L. Planquart et. Al. **Resolving the mass transfer in the symbiotic recurrent nova T Coronae Borealis** estimates that T CrB is composed of a 0.69 solar mass M4 red giant closely orbiting a 1.37 solar mass white dwarf in 227.5 days. For the past 79 years, the red giant has been shedding portions of its outer envelope to its diminutive companion. Eventually, when enough hydrogen has accumulated, a runaway thermonuclear explosion will occur. When? Nobody knows for sure. T CrB

previous eruptions happened very quickly. Will you be the first to spot it?

I’ve annotated Corona’s brighter stars in this 20-degree AAVSO chart.

Clear skies!



Imaging with a camera and static tripod

“Use what ya’ got”

By Khoa Tran.

Astrophotography is a notoriously expensive hobby. From specialized astrograph telescopes, dedicated, thermo-electrically-cooled astronomy cameras, motorized tracking mounts and sophisticated computer-controlled imaging and autoguiding setups, it’s not uncommon for astrophotography rigs to be worth several thousand dollars.

But it’s still possible to take photos with “what you have,” even if all you have is a simple camera and static tripod. You won’t realistically be able to match the results of a many-hours-long deep sky integration, but with some care, excellent images are still within reach. This article will assume you have a DSLR or mirrorless camera, and a sturdy tripod.

[181x2.5 s @ISO800. Olympus E-M5mkII, 25 mm f/4, untracked. Stacked and processed in Siril. Additional processing in GIMP.

Freeze the spin

Unless you're taking long-exposure star trails, your limit will be the earth's rotation smearing your stars from points into streaks. Tracking mounts and and autoguiding systems were developed to take care of this problem, but if all you've got is a static tripod, you'll need to "freeze" the rotation of the earth within each frame you take.

Forget the 500 Rule

You might have heard the "conventional wisdom" of using something known as the "500 rule" to avoid star trailing in long exposure shots. You divide 500 by the "full frame or 135-format film equivalent" focal length of your lens in millimetres to get your exposure time in seconds.

Forget about this rule. It was meant for photography with low resolution lenses on film, printed at 4x6 inches. For that matter, forget about "crop factor" or equivalent focal lengths. These are "convenience measures" inherited from conventional (daytime) photography and have no place in astrophotography. A 200 mm lens does not magically become a 350 mm lens on a "1.5x crop" APS-C sized sensor, and if you tried applying the 500 rule to modern high-resolution digital camera sensors, you'll get stars which would only be round by suggestion.

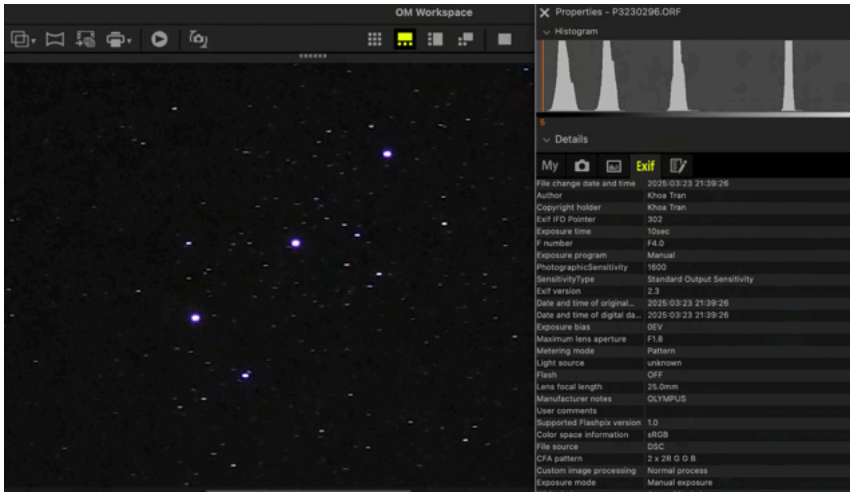
What should you use instead?

Use some math. Seriously.

We know that the earth spins at 15.041 arcseconds per second. Recall that 60 arcseconds = 1 arcminute and 60 arcminutes = 1 degree, and that 1 degree = 2x the width of the full moon. So an arcsecond is 1/1800 the width of the full moon, and so the sky appears to move 0.00833x the width of the full moon in one second.

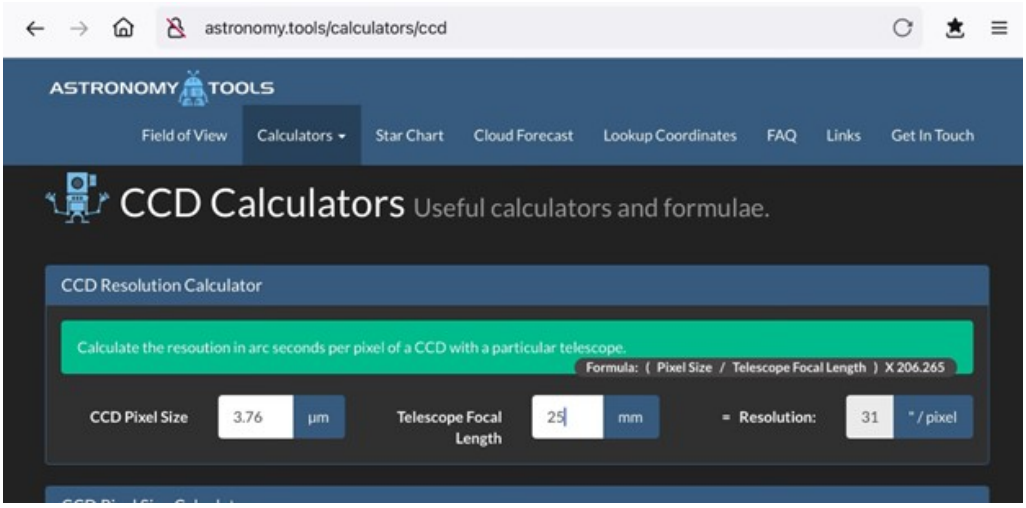
That doesn't sound like a lot, does it?

The camera I'm using in this example is an Olympus OM-D E-M5mkII, with a 25 mm f/1.8 lens. If we were to follow the "500 rule," my lens would be a 50 mm "full frame equivalent" lens, and so 500/50 = 10 s. I will tell you that this is folly. I will also show you an example.



[10 s @25 mm f/4, 100% view. The "500 rule" and "crop factor" would tell you this should give you round stars, but we see that the trailing is obvious when the image is enlarged.

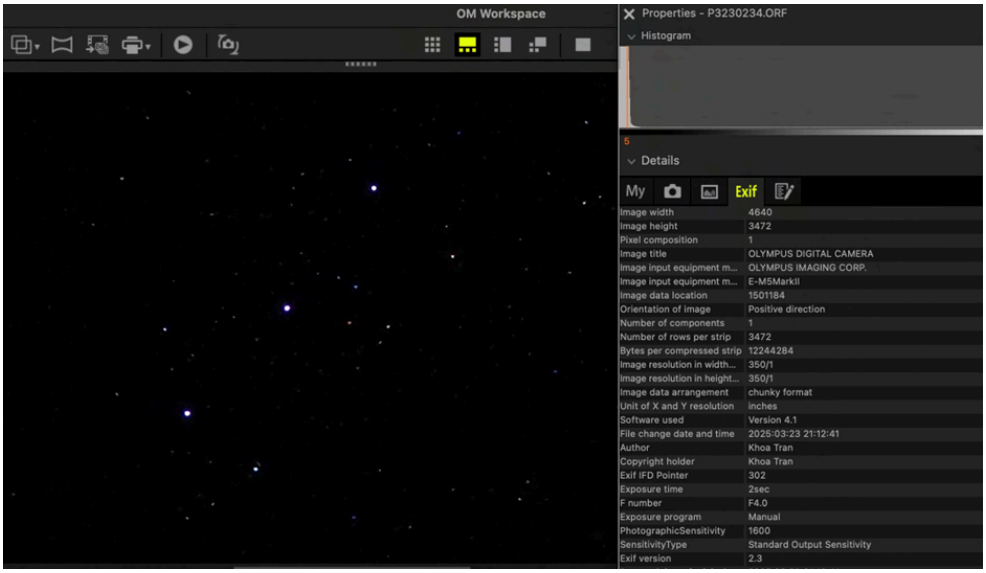
But then, you need to ask “how much sky does each pixel see with my camera and lens?” You could memorize a formula, or head to the handy-dandy CCD Calculator at astronomy.tools for a quick and easy lookup.



According to the calculator, each pixel of my camera and lens combo sees 31 arcseconds. So, at 15 arcseconds of sky movement per second I will have 2 s of exposure time before the movement of the earth spills over and smears a star into a neighbouring pixel. The finer the imaging scale (smaller pixels and/or longer focal length), the less time you have before star trails are noticeable.

But wait! While a theoretically-perfect star is an infinitely small point yielding an image a single pixel in size, this is impossible in reality. Optics and atmosphere will blur this over several pixels, and a colour camera’s Bayer matrix will actually spread a single point into a 2x2 array of pixels.

So I could probably get away with 4 s of exposure time per image, but I chose 2.5 s because Orion is very near the celestial equator, where star trailing is most evident, and also it was cold and I just wanted a safe exposure time for sharp stars. One-and-done, right?



At 2.5 s, the stars are nice, sharp, and round.

What to do with all these images?

It's beyond the scope of this article to cover stacking and post-processing, but essentially, you want to re-frame your target every so often to make sure you get as much of it in the centre as possible for later alignment and stacking. There are myriad tools available for stacking and post-processing. I use Siril, but many others use programs like DeepSkyStacker (DSS), Sequator, PixInsight, etc.

I would not use Photoshop or GIMP to align and stack images. I used to do that about 15 years ago when I started out. It's not fun.

Another estimation tool: the NPF rule

French amateur astronomer Fred Michaud developed a replacement for the antiquated 500-rule called the NPF rule. Various calculators exist online, but I think it's just as easy to remember the earth spins at 15 arcseconds per second, find your imaging scale, and work from there.

What if I don't mind a bit of trailing?

Then shoot as long as your eyes can bear it! Don't necessarily let perfection stand in the way of the good, but also remember that astrophotography is a hobby that lends itself to obsessing over details (otherwise, how else do we justify our telescopes and expensive mounts?). As you progress, your tolerance for obviously trailed stars will diminish. That said, some of my earliest, most technically-flawed images are still some of my most memorable, if only because of that euphoric rush of capturing faraway ancient photons onto the surface of our tiny little camera sensors.

Happy shooting!

"Waiting for the skies to darken," from Rocky Mountain National Park, June 2015. Single image 15 s. Olympus E-PL7, 12 mm f/3.5. Zooming in close will show some trailing, but I think it's still a nice image.

Shakespeare and Time

***By David H. Levy**, Photos by David Levy.*

William Shakespeare is probably the greatest writer the world has ever seen. Was he capable of writing something poorly, if he really tried? I doubt that. He lived four centuries ago. Born in Stratford, he was successful in London, and he retired and died in Stratford.

Scholars studied on every possible aspect of Shakespeare for centuries. My doctoral thesis dealt with an aspect the others largely ignored: Shakespeare and the night sky. Not so much science, or astronomy, but the simple majesty of the sky. When he was 8, his father probably showed him Tycho Brahe's brilliant *stella nova*. A new star it was not, but instead a massive old star blowing up. Years later the star found itself in the opening lines of *Hamlet:*

> *Last night of all,*
> *When yond same star that's westward from the pole*
> *Had made his course to illume that part of heaven*
> *Where now it burns, Marcellus and myself,*
> *The bell then beating one,--*

Many critics have praised Shakespeare's curiosity about Nature — trees, flowers, animals, but I think he enjoyed a special and enduring interest in the night sky. The iambic pentameter lines point to where the supernova would have lit up the sky, around 1 am. in late autumn.

Night sky from Jarnac Observatory

It is possible that Shakespeare, who as a youth developed interests in all of Nature, forged a particular thirst for the night sky. Thanks to his reference in the opening lines of *Hamlet*, I think it likely that Tycho's star led to that passion. But this concern did not begin and end with the simple beauty of the night sky. Especially in his later works, he also developed an inquisitiveness about the cosmos itself, and about how time, though carefully measured in seconds on Earth, passes unhurriedly throughout the cosmos, not in seconds or hours but over billions of years. In preparing my Doctoral dissertation at the Hebrew University, I found more than two hundred allusions to the night sky in Shakespeare's canon. But in *Macbeth* alone I counted 59 references to Time. Here are two of them:

> Time, thou anticipat'st my dread exploits:
> The flighty purpose never is o'ertook
> Unless the deed go with it. (4.1.144-146.)

Shakespeare portends that the progression of time is not always linear. Macbeth addresses Time directly in this passage. Macbeth is continuing his murderous rampage, but time itself knows that the deed itself, to take place

in the future, will confirm the bloody purpose. The unity of time and space, which Einstein posited in his special theory of relativity, in 1905, took place 299 years after *Macbeth* was probably written. In his essay on special relativity, Einstein added the dimension of time to the three dimensions of space, because the observed rate at which time passes for an object depends on the object's velocity relative to the observer. Einstein expanded his thought in general relativity, in which he demonstrated that a gravitational field can slow the passage of time for an object as seen by an observer outside that particular gravitational field.

> To me you speak not.
> If you can look into the seeds of time,
> And say which grain will grow, and which will not,
> Speak then to me, who neither beg nor fear
> Your favours nor your hate. (1.3.55-61.)

In this passage Shakespeare has Macbeth speak directly to Time as if it had a personality, even seeds or parents and children. He is asking time if it could tell him (like the weird sisters) whether his enterprise would succeed or fail. In the play, his enterprise clearly fails with the three-word rapturous stage direction "Dies. Fleance escapes." (3.3.17)

As the play nears its denouement, Macbeth is informed of the death of his wife. I like to imagine that the speech that follows is divinely inspired, as it is one of the finest scripts ever to touch paper: I quote it here, as it appeared in the First Folio published in 1623. I also take the liberty of adding two words at the end:

> She should haue dy'de hereafter;
> There would haue beene a time for such a word:
> To morrow, and to morrow, and to morrow,
> Creepes in this petty pace from day to day,
> To the last Syllable of Recorded time :
> And all our yesterdayes, haue lighted Fooles
> The way to dusty death. Out, out, breefe Candle,
> Life's but a walking Shadow, a poore player,
> That struts and frets his houre vpon the Stage,
> And then is heard no more. It is a Tale
> Told by an Ideot, full of sound and fury
> Signifying nothing.
>
> [Signifying … everything.]

Elizabeth Tower in London, 2022-03-10

I am happy that the conclusion I reach here never made it to my dissertation, as I am certain that some scholars would have rejected it. But in this article, where I get to write what I like, I suggest that without being aware of it, Shakespeare anticipated Einstein's theory of General Relativity by about three centuries. I also think that the culmination of the playwright's wording points to those final two words that quite possibly might have entered the poet's mind at the time, for surely his mind was aware of the status of that speech.

The next time you go out of doors and look at the evening sky, you may behold two of its features. One is the planets and stars that appear. The other is this collection of ancient words that potentially add a new dimension to our appreciation of the cosmos of which, for just an instant, we belong.

A Tail of Three Comets!

By David H. Levy, photo by David Levy.

In just the last few months, we have enjoyed a parade of no fewer than three comets. Last fall there was comet Tsuchinshan-ATLAS, discovered by the Purple Mountain Observatory in east China, near Nanjing. The comet sported a very long tail and it was visible without a telescope for several weeks. It was the highlight of an observing session a local high school shared with its students. As the students sat and gazed at the sky, they could easily spot the tail stretching proudly across the western heavens.

Just a few weeks later, in December, a second ATLAS comet began to brighten significantly. I tried hard to see it as it was apparently visible for less than an hour during evening twilight, but couldn't find it.

My close friend Steve Edberg, however, did. He and his family had to evacuate their home in La Cañada due to the fires burning at the time. On the evening of 14 January, while strolling along San Francisco's Golden Gate Bridge, he spotted Comet Atlas low in the west. He is one of the very few observers in the northern hemisphere to see it. He was so excited about it that he called me over the telephone. Our conversation was the first in more than two years but it resumed a friendship that has lasted for decades. I was proud of him that night over his sighting, and still am.

Over the next few days, until Comet ATLAS sank below the southern horizon, I attempted unsuccessfully to spot the comet. But then, on 25 January, I was outside looking at some cirrus clouds. Behind them, in the southern portion of the sky, there was something else — strange, misshapen. It might have been the tail of Comet ATLAS. I recorded it as a possible sighting.

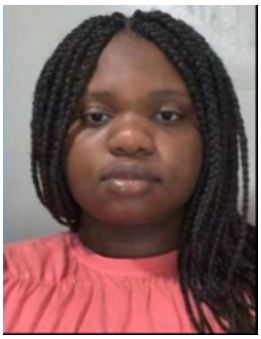
When *Sky & Tele*scope's June issue appeared with its pictures of the great "ghost comet," meaning that the head had disintegrated, the actual tail looked identical to what I saw on photographs taken just two days earlier than my sighting. I changed my record from "possible" to "probable." Comet ATLAS is the 236th comet I have seen since Comet Ikeya-Seki in 1965.

There was yet a third comet. Comet Swan (C/2025 F2) was discovered in March 2025. The discoverers used the Solar and Hemispheric Observatory spacecraft's SWAN (Solar Wind Anisotropies) instrument. I saw this lovely comet on the morning of 10 April 2025. This SWAN instrument aboard SOHO, and SOHO itself, by the way, has discovered more than five thousand comets**.**

Three wonderful comets over just a few months is unusual, interesting, and fun: But all three have departed. As Hopkins wrote in 1864,

> But then her tether calls her; she falls off,
> And as she dwindles sheds her smock of gold…
> And then goes out into the cavernous dark.
> So I go out; my little sweet is done:
> I have drawn heat from this contagious sun:
> To not ungentle death now forth I run."

Planets: What are They?

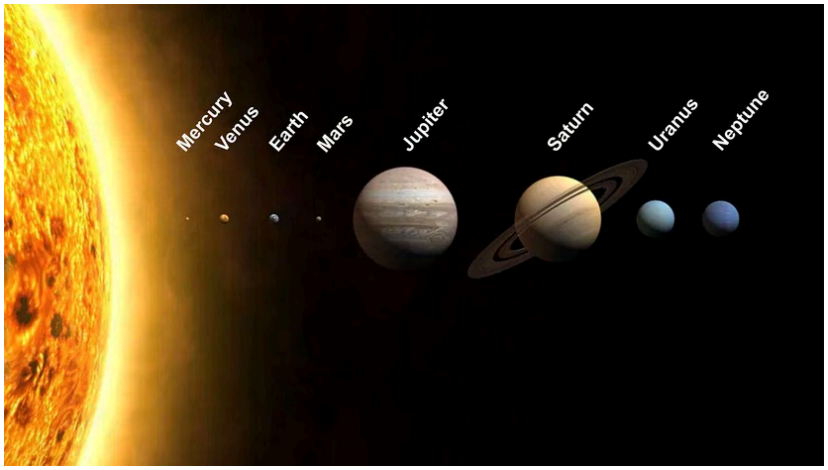


By Véronique Djomou

Planets: what are they, how are they named, and more...

Intro.

Earth is the **third**[1] planet from the Sun. Have you ever asked yourself what a planet truly is? It's a simple question, yet it carries profound complexity. In this exploration, I will delve into the universe of planets, examining what defines them as scientific research evolves. We will also explore how planets are named and uncover the various origins of the names of the planets in our solar system.



DESCRIPTION: Stimac, V. (2023, July 12). What are the solar system planets in order? HowStuffWorks. Retrieved June 1, 2025, from https://science.howstuffworks.com/planets-in-order.htm

What Are They?

The question "What is a planet?" has undergone significant evolution over time. The term originates from the ancient Greek word *planńt*, meaning "wanderer." According to Merriam-Webster dictionary, a planet is defined as "any of the large bodies that revolve around the Sun in the solar system."

In 2006, the International Astronomical Union (IAU) adopted a formal definition, stating that a celestial body must meet three criteria to be considered a planet: it must orbit a star (like our Sun), possess enough mass to assume a nearly round shape due to gravity, and have cleared its orbital neighbourhood of other objects. This definition led to the reclassification of Pluto[2] as a dwarf planet. The crucial factor that led to Pluto's reclassification is that it has not cleared its orbital neighbourhood. This means that Pluto shares its orbital zone with other objects.

DESCRIPTION: Wikipedia contributors. (2025, May 26). Pluto. Wikipedia, The Free Encyclopedia. Retrieved June 1, 2025, from https://en.wikipedia.org/wiki/Pluto.

As our understanding of celestial bodies expands, so do the definitions. Historically, planets included not only those we recognize today but also the Moon and the Sun, which were considered planets by ancient Greeks. Over time, discoveries such as Uranus and Neptune expanded our definition further (SCIENCE.NASA.GOV).

How Are They Named?

The naming of planets draws from a rich tapestry of history and mythology. The five classical planets visible to the naked eye (Mercury, Venus, Mars, Jupiter, and Saturn) derive their names from Roman mythology. Each name honours a Roman god;

Mercury is named after Hermes, the swift messenger god; **Venus** derives from Aphrodite, the goddess of love and beauty. **Earth** corresponds to Gaia, the personification of the Earth and mother of all life. **Mars** is linked to Ares, the god of war, while **Jupiter** takes its name from Zeus, the king of the gods. **Saturn** is named after Cronus, the god of time and harvest, and **Uranus** is associated with Ouranos, the personification of the sky. **Neptune** corresponds to Poseidon, the god of the sea, and **Pluto** is named after Hades, the ruler of the underworld. This blend of mythology and astronomy reflects the historical significance of these deities in understanding the cosmos, influencing literature and culture throughout the ages.

DESCRIPTION: Ceylinco Life. (n.d.). Do you know... all of the planets in our solar system, excluding Earth, are named after. Facebook. Retrieved June 1, 2025, from https://www.facebook.com/CeylincoLifeofficialpage/posts/do-you-knowall-of-the-planets-in-our-solar-system-excluding-earth-are-named-afte/1674149585989435/.

As telescopes advanced, astronomers identified numerous smaller celestial bodies, including dwarf planets like Ceres and Eris. The IAU remains the authority responsible for naming these objects, navigating the complexities of classifying and naming discoveries in our ever-expanding solar system.

Conclusion

In summary, the definitions and names of planets are not static; they evolve in response to scientific advancements and cultural influences. The ongoing debate about what constitutes a planet underscores the dynamic nature of astronomy as we continue to explore the cosmos.

Summer is generally a good time to see planets, and for some planets, it's the best time of year. Planets are often brighter and more readily visible in the summer months due to favourable sky conditions and planetary alignments. So next time you look up at the sky, you now know what a planet is!

References

1. NASA. (n.d.). What is a planet? Retrieved May 28, 2025, from https://science.nasa.gov/solar-system/planets/what-is-a-planet/
2. Furfaro, E. (2023, July 26). How do planets get their names? We asked a NASA scientist: Episode 45. NASA. Retrieved May 28, 2025, from https://www.nasa.gov/general/how-do-planets-get-their-names-we-asked-a-nasa-scientist-episode-45/
3. English, N. (2020, May 26). Who are the Greek gods of the planets? Under Lucky Stars. Retrieved June 1, 2025, from https://www.underluckystars.com/blog/who-are-the-greek-gods-of-the-planets/?srsltid=AfmBOorp14yqYlXAVOe-6Y5k683ojbwoIBmIyYAJaVLSF7yC57VWNqy8
4. Wikipedia contributors. (2025, May 26). Classical planet. Wikipedia, The Free Encyclopedia. Retrieved June 1, 2025, from https://en.wikipedia.org/wiki/Classical_planet
5. Caltech. (n.d.). How did the planets get their names? Cool Cosmos. Retrieved June 1, 2025, from https://coolcosmos.ipac.caltech.edu/ask/196-how-did-the-planets-get-their-names-
6. NASA. (n.d.). About the planets. Retrieved May 28, 2025, from https://science.nasa.gov/solar-system/planets/

The picture of the sun is the very first picture I took with my new DWARF 3. I took it on the 3rd of June with the VIS filter, I set the shutter to 1/15 s, gain at 10. I took and stacked 150 photos.

On the 7th of June I took a photo of the moon. The pink one is the original one with the shutter at 1/250 s, gain at 10, 150 photos stacked, and I used the VIS filter. The white one is the edited version, I edited it in Google photos.

Luca D'Aliesio

Rosette Nebula by Detlev Schmallhaus. Three hours total.

Concordia Astro Radio Project

By Lukas Vieira

With the central goal of nurturing early-year undergraduates' scientific skills by offering practical opportunities, the Concordia Astro Radio Project (CARP) arose as an initiativeto attract interested students to Astrophysics and its interdisciplinary nature.

The project began as an independent initiative and received the kind help of the John Abbott College Physics Department for its start. They offered an unopened radio receiver kit which allows the observation and study of our Sun and of volcanic activity on Jupiter's moons [Image I]. During early stages, the kit was assembled by a small group of students at Concordia's physics laboratories. This allowed hands-on contact with electronic circuitry under the guidance of the laboratory technicians. This was a great opportunity for experiencing and applying basic principles of electromagnetism and led to insightful discussions about their application and subtleties. The activity's less formal setting also fostered an environment of learning and exchange between our colleagues and supervisors, and greatly complemented notions which had been formed in classroom.

***Image I**: Radio JOVE receiver during assembly stage (May, 2024)*

Once the kit was assembled and deemed functional, it was then tested by the group with the use of earphones and both an analog and a digital oscilloscope, which had been provided by the physics lab technicians [Image II]. In addition to learning how to operate these two sorts of equipment, this allowed us to compare how one same phenomenon can be captured differently by analog and digital mechanisms and gave us a picture of the advantages and compromises of each type, giving way to more holistic views about the signal which we were measuring.

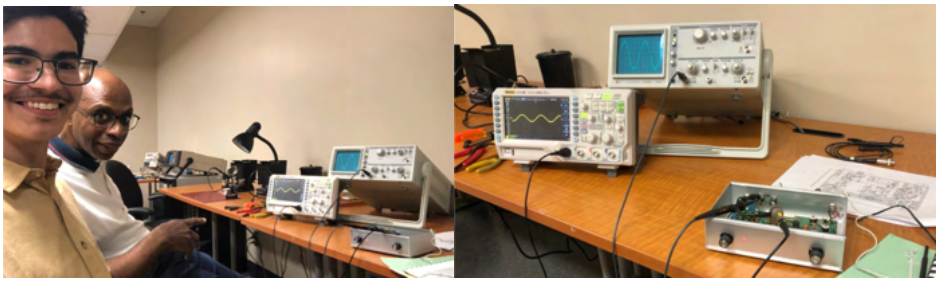


***Image II:** testing of JOVE receiver with oscilloscopes (August, 2024)*

As the receiver assembly and testing were completed, the project was in need of more resources to proceed to the next stage: connecting our receiver to an antenna. Through reviews of literature and discussions with the lab technicians, we concluded that a loop antenna could be the best choice for our context, allowing observations of the strong signals of the Sun with a relatively small apparatus in settings of moderate to high radio interference, as is the case of the university's campus. This design would also be relatively simple and inexpensive to build, constituting an excellent opportunity for a learning experience

for freshmen students [Image III]. With this, we started making our own assembly plans and estimating costs for the needed materials, when we were suddenly surprised by our technicians who presented us with a ready-to-use amateur loop that they had found at a regional radio convention fair [Images IV & V].

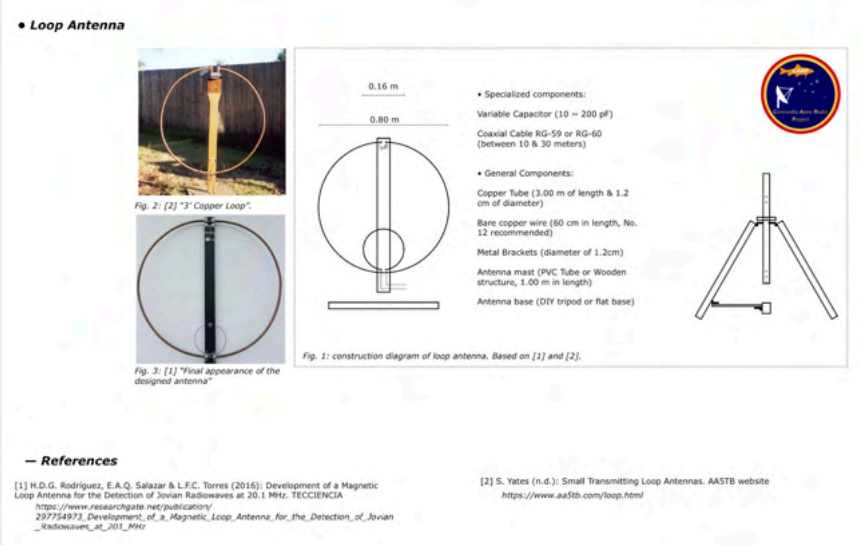


***Image III**: initial plans for loop antenna (September, 2024)*

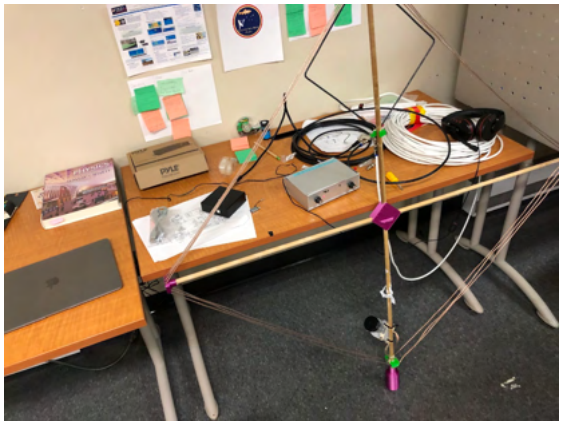


***Image IV:** project's loop antenna and receivers in preparation for the 2025 ExpoScience (April, 2025)*

Receiving this antenna was a great help to the project, especially because we were having difficulty raising funds to purchase materials. At that stage, even though we had an antenna, we were still in need of specialized wiring and connectors to allow its coupling to the receiver, and could not progress much further due to the lack of funding. In this setting, we came across the Experiential Learning Grant and registered our project in application to it. This process, by itself, was a very good opportunity to summarize how the project had gone thus far and to devise a concrete plan for its future goals. A few weeks after submitting the application, we received the good news that we had been selected by the grant's committee and were awarded an amount that would allow us to finish this stage and to expand the project one step further. With this funding, we could now aim at building a larger antenna which could enable the capture of signals from the planet Jupiter and its moon Io.

***Image V:** testing of CARP equipment for 2025 ExpoScience (April, 2025)*

This moon is of particular interest due to its volcanic activity which occurs with a characteristic frequency. In Jupiter's planetary system, the large mass of its moons, which are comparable to the Earth, causes their orbital periods to be synchronized due to gravitational attraction, with the time taken by the innermost moon to complete a full revolution representing one half of that of the second innermost and so forth. When the moon Io and its neighbour pass close to each other, their mutual attraction provokes a pull on the magma which underlies Io's thin crust,

leading to its ejection and the release of particles which escape the moon's gravity. Since these particles are electrically charged and the surroundings of Jupiter are permeated by the planet's intense magnetic fields, these particles, following principles of electromagnetism, propagate in spiral paths along the field lines and irradiate energy as they travel and revolve around them. Upon reaching Earth's atmosphere, the emitted radiation then interacts with layers of ionized particles and generates disturbances which can be captured by radio receivers on the ground, phenomena which are called Sudden Ionospheric Disturbances (SIDs) and represent the main observable target of our project.

With the grant's funds as a means to proceed, it was then time to plan which materials we would need to build the new antenna. For this, we chose to follow the plans of a team of NASA engineers who had also designed our receiver and launched an international citizen science campaign (The Radio JOVE Project) with the aim of studying SIDs. The challenge then was finding where to make our purchases and how to optimize the budget's use. After visiting a few stores and comparing their offerings, we made a first acquisition of connectors and cables which were then taken to the physics laboratories so that we could make measurements and cuts at specified lengths [Image VI]. To gather volunteers for this part, we then made an announcement poster calling new students and shared it on the project's on-line communications medium [Image VI]. However, it did not yield much response, and it was only through direct contact that one interested student came to join us. Upon making the measurements, we engaged in conversations about the project's science and aspects, and decided to postpone the cutting for we could not find adequate tooling. This, however, allowed exchanges which were valuable to our colleague, who had just embarked on his studies of electrical engineering after coming from a considerably different first degree background and was seeking involvement with the new field's research community.

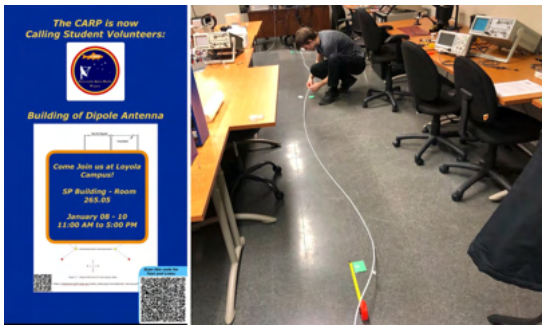


Image VI: *volunteer call poster and cable measuring (January, 2025)*

At this project stage, the fact that we had minimal experience with antennas was starting to limit what we could do with reasonable confidence and resulted in the slowing down of our progress. The small size of our team and the impending return to classes was also a hindrance. A few weeks later, however, during an open house visit to laboratories of the *Institut Nationale de Recherche Scientifique* (*INRS*), we were invited to bring our equipment for further guidance and testing after having mentioned it to the professor who received us and who had a strong passion for radio communications. He became very interested in our project's mission. This was the beginning of a series of five visits, during which we made precision measurements of our receiver's operational characteristics (namely range and performance) in addition connecting it for the first time to an antenna and recognizing signals from both the sun and ground-based stations https://www.qrz.com/db/VA2OBW[1]. These visits were remarkable opportunities for learning directly from the professor's vast and passionate expertise and led three new students to have hands-on contact with the project [Images VII & VIII].

Image VII: *receiver testing at INRS's laboratories (February, 2025)*

[1] During the visits, we were gracefully invited to join the professor in his house, where he hosted an amateur radio station with two very big antennas and a multitude of equipment. For more information, visit: https://www.qrz.com/db/VA2OBW

Image VIII: *visualization of possible solar flare with a spectrum analyzer and a 40-m triangular loop (February, 2025)*

Following this, he advised us on how to build our new antenna and we then finalized the acquisition of its materials, having also purchased a new receiver which allowed us a broader signal detection range and which could be connected to a computer for a visualization of incoming signals [Image IX].

With a complete and calibrated equipment set and good advice for proceeding, the project now had at its disposition a functional and portable solar observing station, which uses the antenna given by the physics lab technicians and the material and plans to build a pair of 7 m dipole antennas for observations of Jupiter. It was also at this time that we received an invitation to represent Concordia's physics department at a province-wide science fair which would be hosted at its campus: the 2025 ExpoScience. This allowed the project to be shown to multiple visitors, contestants and students and for us to share with them some of the learning, experience and passion which we had developed throughout this journey [Images V & X].

Image IX: *signal visualization with CARP's Software Defined Radio (SDR) receiver (April, 2025)*

Reaching this stage of the project would not have been possible without the help of all those who were briefly mentioned in this account. We are very grateful for the invaluable generosity and support of professors Karim Jaffer (John Abbott College) and Serioja Tatu (INRS). We acknowledge also the continuous guidance and assistance of the technicians Zeljko Bulut (Concordia Physics) and Wentworth Brookes (Concordia Physics) and for the participation of each of the students who joined us with their curiosity, time and aptitude to make the project advance. We are also thankful for the support of the Experiential Learning team, whose funding made possible the continuation of our project and whose mission strives to provide students with remarkable experiences such as the CARP project.

With gratitude for this learning opportunity,
Lukas Vieira P. de Souza
Project leader and initiator
May 22, 2025

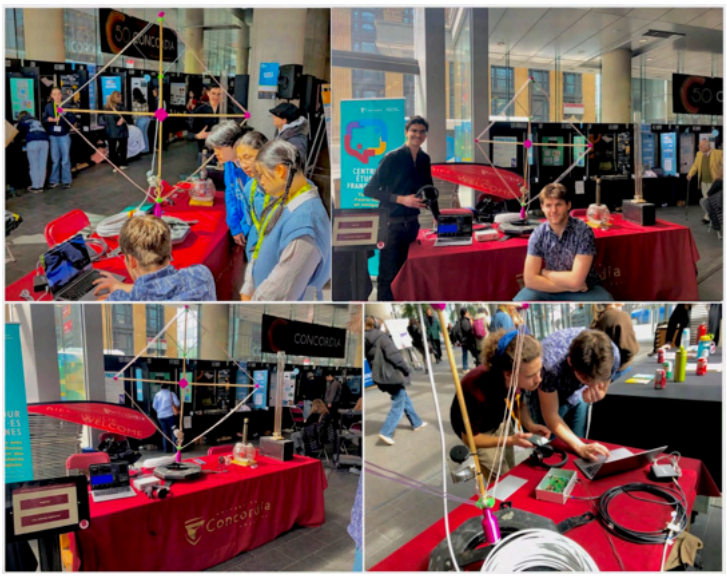


Image X: *CARP at 2025 ExpoScience (April, 2025)*

Morgan Arboretum

Welcome to the Morgan Arboretum!

Live, breathe, and enjoy 245 hectares of Saint-Anne-De-Bellevue forest, meadow, and wetland trails inviting you to connect with nature. Our nearly 25 kilometres of all-season paths offer you the chance to explore one of Montreal's most precious nature reserves. Come for a picnic with family or friends in summer, watch in awe at the leaves in fall, ski our groomed trails in winter, and rejoice in the new warmth of spring. Open all seasons, with activities for all ages.

The Morgan Arboretum specialises in 4 main areas; conservation, research, education and leisure. Numerous recreational programs are available for all ages, such as Shinrin Yoku (guided forest bathing), summer camp programs, ecological workshops, scavenger hunts, and holiday events! As protecting and conserving our land is at the forefront of our mission, a combination of youth educational programming and a land maintenance team ensures that our community is well taken care of. The forest also provides fantastic research space for student projects, as it provides a consistent, untouched environment for scientific study.

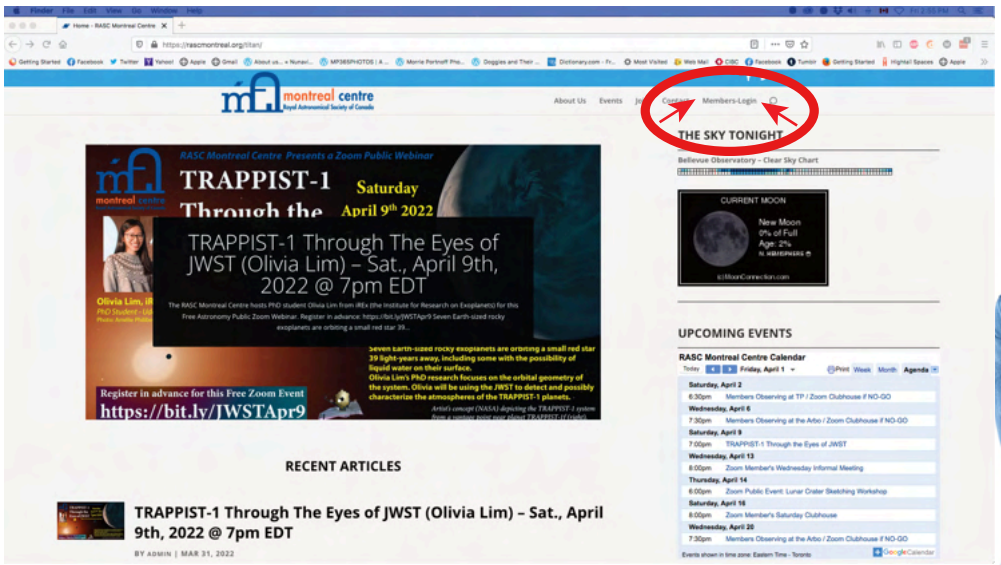
Did you know that the Arboretum is home to over 500 species of plants, animals, insects, and fungi? It is home to many unique species, such as monarch butterflies, jack-in-the-pulpit flowering plants, Cooper's hawks, and giant puffball mushrooms.

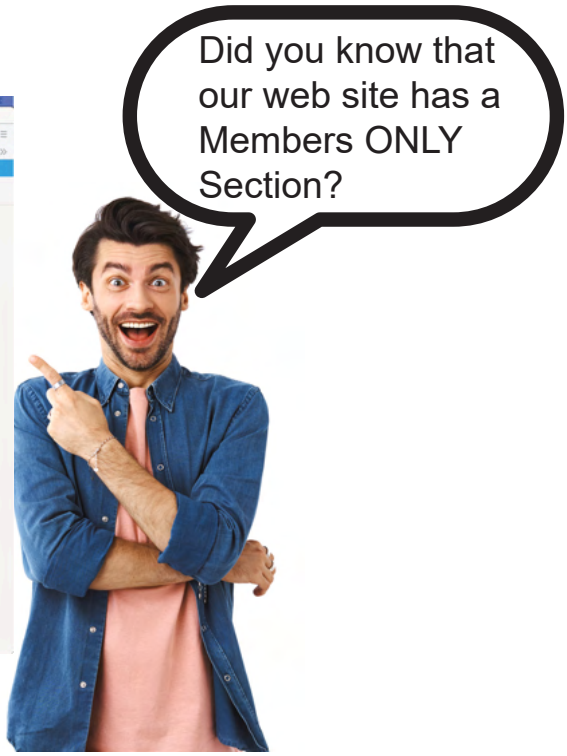
The Morgan Arboretum is open to the public and members every day of the week from 9:00 AM to 4:00 PM. Our membership program offers daily access based on a yearly fee, and is available for purchase now! To purchase a membership, please refer to our website's "membership" section below.

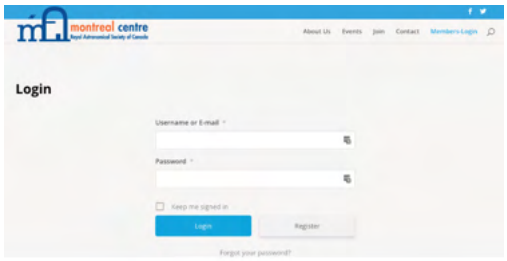
For more information, call 514-398-7811, email gatekeeper.morganarboretum@mcgill.ca, or visit our webpage at www.mcgill.ca/morganarboretum

Being a RASC Montreal Centre Member has its

ADVANTAGES



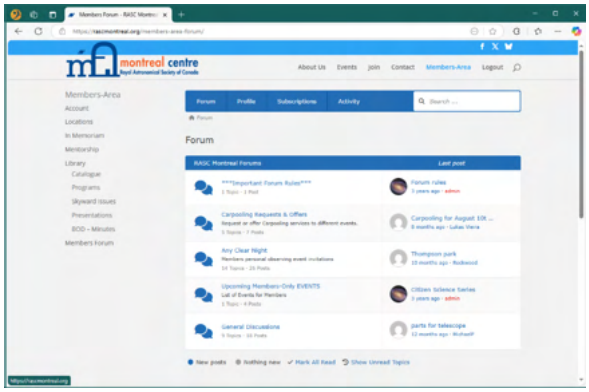




Sign Up Today and discover
so much more about your astronomy club
Contact Richard, our Webmaster if you have any problems at
webmaster@rascmontreal.org

Subscribe to member only forums
Including:

- Any Clear Night Going out to do some observing?
  Let others know so they may join you,
  or you may join others.
- Carpooling Requests and Offers



To get notifications or to notify others, you MUST subscribe!

For Sale

Thousand Oaks - 4 channel Dew Heater

Plus:

- **2 x 2 inch Heater Straps**
- **2 x 1 inch Heater Straps**
- **1 Power Cord Extension**

A $400 + value for only $199.00

Contact Ronroyal@aol.com