Skyward

September - October 2025 Edition

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In this Issue

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

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Cover Image: By Andrew Maenz. *Super Harvest October Full Moon, October 6th.*

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.

Alas, no letters to the Editor this issue. We do have something new, however. This is an excerpt from the album and book by Louise Campbell and the late Ian Ferrier entitled Dark Sky Preserve. As raising awareness of light pollution is part of RASC's goals embodied by the Light Pollution Abatement Committee and the Dark-Sky Sites Program, we will present some excerpts in our pages with the author's permission.

Nader Daou's article this issue talks about what we know, so far, about interstellar comet 3I/ATLAS. This comet may be difficult for amateurs to see but fear not, there are two other comets in the sky and Karim Jaffer caught C/2025 A6 (Lemmon). See his photo on page 5. Nicole Laporte continues her Explore the Universe series with the Pleiades and Hyades. If you're interested in this programme, these are super easy targets.

Space exploration super fan, David Shuman, and our Aurora Hunter, Alexei Weins, took a road trip to Florida to see rocket launches (and landing). David recounts their adventure in his article. Speaking about auroras, September 15th saw a marvellous outburst, widest I've personally seen. Alexei photographed it from Bishop's University and your editor and spouse shot them from Lac Supérieur. You can also see Karima Kanji's images on our Facebook group.

David Levy muses about his thrill of the night sky and whether multiple impacts did in the dinosaurs. Marc Ricard's computer died and he could not provide a new article this issue so we've reprinted his Cassiopeia article from 2023.

Enjoy.

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

Ed.

Word from the President

By Morrie Portnoff.

Greetings fellow RASCals,

With cooler evenings it seems like clear skies are starting to appear on a more regular basis. Also, it gets dark earlier which is great for us daytime working members/astronomers. This past Wednesday's Clubhouse proved just that. With around 17 members including some new ones and perhaps one of our youngest (more on that later) we were out under a bright quarter moon all sharing some amazing views of the night sky. One new member came with her family because she is way to young to drive. She brought a small, rather wobbly, telescope that she was so proud of since it was hers. Having never used it before we all quickly made her feel special and helped her see her first light with it. She saw the moon but more exciting to her was the view of Saturn. In fact, she told me that when she went to school the next day, she would be so excited to tell her friends and teachers what she saw through her telescope. This is what makes the Montreal Centre so special. We welcome new members of all ages, make them feel special and never leave them sitting alone staring at their telescope not knowing what to do with it. This young lady is now an "amateur astronomer" with dreams of a bigger sturdier telescope.

The other big event was our annual Townsend Lecture. This year we were lucky to have Dr. Lisa Dang of the University of Waterloo presenting an entertaining talk on "Hellish Worlds: The Science of Lava Planets". Dr. Dang's presentation featured these scorching hot lava worlds as seen from the James Web Telescope. Of course, we had our annual members' reception with our guest prior to the main event where we got to meet Dr. Dang on a more informal basis. Thank you to everyone that helped organize this wonderful evening!

I must thank Tim Bird for stepping up and taking command of the clubhouses. Tim has taken the load off myself and Nicole for the running of the clubhouses. With the assistance of Tim we have now been able to add clubhouses to virtually every Wednesday night. During the winter this will turn into not only more clubhouses but also more library nights.

Finally, next month on Saturday November 22nd we will be holding our/YOUR Annual General Meeting (AGM). Granted this may not be the most exciting gathering but it is the *MOST IMPORTANT ONE!* So, please mark your calendar and look out for up coming emails with full details of the agenda and upcoming slate of the Board of Directors with some vacant positions. Please make every effort to attend either in person (we supply the coffee and snacks) or via ZOOM (you supply your own snacks).

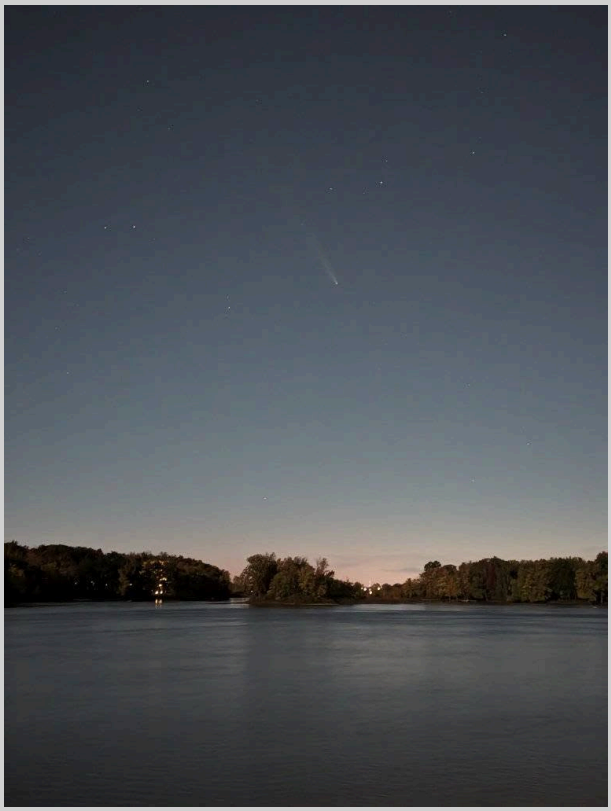
As always, keep an eye out for more announcements of upcoming events over the next weeks and months. I hope to see you at these events. Feel free to introduce yourself if you are new to the Centre. Don't be shy and you will quickly find out that we are a very welcoming group of friends.

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 out. 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.

Clear Skies as always,

By Daniel Biron. *M33 (Triangulum spiral galaxy),Seestar S30 in alt-az mode, 75 minutes integration (450*10s), Bortle 7 location, Moon at 0%, Image enhancement done with the Seestar app.*



By Karim Jaffer October 16th, Comet C/ 2025 A6 (Lemmon). *Enjoyed a night of comet viewing with my daughter Taara, fellow RASCals, JAC students and former students, and a few fellow teachers! There's something added when you share these experiences - that's what makes RASC Montreal so special.*

Google Pixel 7 hand-held, no editing (yet)... We're hopeful of getting another night with C/2023 A3 T-ATLAS tomorrow.


ANNUAL GENERAL MEETING
November 22nd
Watch for upcoming emails
with full details
montreal centre
Royal Astronomical Society of Canada

Vice-President's Report

By David J. Shuman, *Vice-President*

How time has passed, and as I write this, we are in fall already.

This can only mean one thing: ***Movie Nights are coming back!***

Our theme is Mars Madness! Bad and good movies featuring our red neighbour.

The first Movie Night is scheduled for Saturday November 15th. More Movie nights in the winter, details to follow.

Alexei and I took a trip to Kennedy Space Center this past August and we were able to see no less than four rocket launches, and a landing (return to landing zone at the Cape). We will be sharing our experiences with you on November 29th at our Isabel K. Williamson Library in the John Abbott College Anne-Marie Edward Science Building.

You can read about our adventures in this issue of Skyward. Amazing in-person videos to be presented in November.

I will also have one or two "astrophotography workshops" and other members' events at our Library this coming winter. Artemis is launching to the Moon in February with our very own Canadian astronaut, Jeremy Hansen — something to celebrate!

Stay tuned for details.

Public Events, Outreach, Inreach

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

Recent Events

We hit the heights of summer 2025 with back-to-back Perseids Outreach and Public Events with good weather and an unexpected turnout scale. Our August 11th Outreach event for the MDA Space families was the 2nd annual event we've held for our neighbouring space robotics and satellite company. This year the audience was over 300 registered participants, with many taking advantage of a shuttle bus arranged by the MDA team from their parking lot to the parking area near the dog park. Over 200 of the registrants were able to enjoy one of three unique presentations delivered by recent JAC Astro Alumni – Lily Donnelly, Eveline Liu and Mya Sa Maré. The atmosphere, weather, incredible engagement from our volunteers and the refreshments for the evening were a treat for everyone.

On **Aug 12th** RASC Montreal held the 2025 **Papacosmas Perseids Meteor Shower Event** with two presentations offered for the general public by Willow Taiger covering the science, history and viewing of this annual night sky event (recorded YouTube link below). As the night became dark the audience continued to arrive and parking was beyond full, and once we reached 700 with no end to the lineup in sight, security concerns meant the event had to be closed down. A large lineup at the observatory, a crowd enjoying a night on the field, and even the stage 2 fuel release of the Ariane rocket being viewed in the sky – the audience wanted to stay but by 11 p.m. we were able to clear the field. A new strategy for these meteor shower star parties will be developed by the Board of Directors over the coming months.

https://youtu.be/gwBfbHuZegs

On **Saturday Sept 27th** RASC Montreal held our annual Keynote Public Talk: the 2025 T**ownsend Lecture by Dr. Lisa Dang from the University of Waterloo.** Beginning with a Members' reception and with a large in-person audience and many joining us online we had a vibrant event with Dr. Dang spending almost an hour after the talk answering questions and chatting with our RASC members and

students from both John Abbott College and from Dawson College. If you missed it, enjoy the 2025 Townsend Lecture on YouTube.

https://youtu.be/P2nSlv54G3I

On **Saturday, Oct 4th** RASC Montreal held a unique bilingual Public Event as part of the **International Observe the Moon Night**, celebrating Dark Skies at the Morgan Arboretum – the darkest skies on the island of Montreal. Our partners from the Dark Sky Preserve project arranged for a shuttle bus from downtown for their audience of artists, musicians, poets and writers. Beginning at 7 p.m. with a short introduction to the Montreal Centre for an engaged audience of over 80 in the conservation centre (and just outside) and a two-eyed seeing land & sky acknowledgement, we had a lunar observation talk by Nicole Laporte and an overview of the Dark Sky Preserve book and album by Louise Campbell. After that the Quebec Writers' Federation presented poet Sarah Wolfson and *La poésie partout* presented Joël Pourbaix who was accompanied with live music by Louise. With another night of good weather we were able to move out to the observing field with the Dark Sky Preserve album being played on speakers setup by Audiotopie, with another listening area just outside the conservation centre with a constellation star stories activity animated by members of the Dark Sky Preserve team and our JAC Space Club partners – and with help preparing the materials by the Dawson Astronomical Society. The poetry, talks, music, telescope views and wonder of the Moon all added to an incredible night experience for volunteers and attendees.

More on this event in the Dark Sky Preserve article elsewhere in this issue of Skyward.

A highlight reel of the Oct 4th event will be posted on our YouTube channel later this fall.

https://YouTube.com/RASCMontreal

Upcoming Events

Our Public Events & Outreach portfolios are partnering with the Michigan University Lowbrows to host a Citizen Science workshop for Members and our partner student groups on **Monday, Oct 20th**.

Explore the Space Telescope data archives and learn a simple workflow to process JWST and Hubble images.

Join us in-person at the RASC Montreal I.K.Williamson Astronomy Library… or attend the workshop online. Register at: https://bit.ly/MAST2025

Your confirmation email will include a link to download image files and install free image processing software (GIMP) ahead of the workshop.

This year's **Spooky Nights** event will be hosted by the JAC Space Club with our RASC Montreal Centre team on **Wednesday, Oct 29th** from 6 p.m. to 8 p.m. at John Abbott College in the Casgrain Building Agora.

Young aliens, astronauts, goblins and monsters are invited for a Spooky and Starry Haunted Evening: design your own planet, explore night sky constellation stories, create a Moon lander… These, and many more wonders are in store for the kids in your family.

Sweet treats await these young kids as they pass through these Astronomy activities in the early evening during this free event. Please share this invite with interested families!

On **Saturday, Nov 29th** join our RASC Exec David Shuman & Alexei Weins as they share their recent journey to watch rocket launches and more in Space Places II: What a Blast!

An evening of pictures, high-res video shots, and experiences to enjoy what it was like doing a road trip to capture the joy of controlled explosions.

Join us at John Abbott College in Penfield Building, room P-204 on Saturday, Nov 29th at 7:30 p.m. EST.

Save the Date: RASC **Montreal Geminids Night: Saturday, Dec 13th** at the Morgan Arboretum.

RASC Montreal Public Events is proud to be part of the Global Star Parties (GSPs), hosted by Explore Scientific – and with the additional position as Chair of the RASC National Education & Public Outreach Committee we (RASC) are now an official co-host of the GSPs!

GSPs are simulcast to Facebook, YouTube, Twitch, and Twitter social media sites and the live audience can chat with the broadcaster from Explore Alliance, who will relay your questions and comments to the presenters. You can also watch the live presentation on the CloudyNights.com forum and at https://ExploreScientific.com/live

You can view previous Global Star Parties at: https://www.explorescientific.com/pages/explore-alliance-live-global-star-party.

- Wednesday **October 22nd**, RASC Montreal Informal Members' Clubhouse at the Arbo.
- Saturday **October 25th,** Members Observing at Thompson Park/ Zoom Clubhouse if NoGo.
- Wednesday **October 29th**, Spooky Nights. See above.
- Saturday **November 15th**, Movie Night at the Arbo.

CAFTA 2025

On October 4th, the Dorval Astronomy Club, the Société d'astronomie de Montréal and Centre français de la SRAC (RASC) hosted the 42nd Annual Telescope Making Contest at the Dorval Sarto-Desnoyers Community Centre. As usual, the Montreal Centre was well represented and our own master craftsman, Karl Petruch was the keynote speaker. Karim Jaffer, our Coordinator of Public Events was presented with the Fred-Clarke award in recognition of his contribution to amateur astronomy. Photos by Daniel Biron.

Nader Daou and Paul Simard

Keynote speaker, Karl Petruch

Frank Tomaras and Karl Petruch make final adjustments to their entry.

Santiago Lopez examines and entry.

Pierre Tournay presents Karim Jaffer the Fred-Clarke Award

Frank Tomaras with Bill Strople

Paul Simard, David Shuman and Karim Jaffer

Dark Sky Preserve: Perseids

Perseids

by Ian Ferrier

from the book & album Dark Sky Preserve, available for streaming and to purchase:
https://ianandlouise.bandcamp.com/album/dark-sky-preserve

As I write this we are in the midst
of the Perseid meteor shower,
comet Swift-Tuttle streaking into our atmosphere.
Its orbit intersects ours in August each year
Its orbit strewn with debris broken from the main body.

And the place it intersects our orbit?
We call that August.

Each piece of debris that touches our atmosphere burns.
And every 133 years the comet itself streaks into our lives.

In 1992 the last time
Then 2126
But this time it will come a few thousand miles from here
Big enough to take out life on this planet

And you and I, we're circling each other now.
In orbits 5000 kilometers apart
What happens when we touch again?
What kind of debris rains down?

I am feeling the fire of your touch on my body,
the touches of you in my life,
multiple images I have of you,
how from out of nowhere you appear
so ferociously beautiful.

Each of those little streaks is a mark you've made on me,
and on this day they are everywhere,
sixty or seventy per hour,
from all parts of the sky

streak into our atmosphere

touching me,

changing me,

burned into my life.

RASC Montreal: A copy of the Dark Sky Preserve book is now in our I.K.Williamson Library. Stay tuned for a free online Dark Sky Preserve Album listening party on Nov 23rd – details to follow. And our friends at the Quebec Writers' Federation have received several incredible astronomy-themed poems which will be shared in future issues of Skyward.

New Members

Please join us in welcoming these new members:

Alejandra Cortes	***Laura Nunez***
Omar Mikati	***Rodrigo Castro***
Roberto Correa	***Haruko Ichikura***
Emma Correa	***Louis-Simon Menard***
Adrian Daou	***René Levesque***

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 December 1st. A reminder will be mailed November 20th. Publication will be in the last week of December.

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.
- Unless you instruct me otherwise, I will use images posted on our Facebook Group.
- Be aware that if you send a PDF I will not have your fonts.
- Original work preferred. **Do not infringe copyrights**. Other images must be properly licensed and cited.
- If you include images that are freely usable, such as SkySafari or NASA, cite the references.

Townsend Lecture

On September 27th, the Centre hosted our annual Townsend Lecture featuring Dr. Lisa Dang who talked about Lava Worlds. You can watch this lecture on our YouTube channel at https://youtu.be/P2nSlv54G3I. This lecture series is named in honour of George Horsely Townsend. George joined the Montreal Centre in May 1943 at the age of 76 and was a member until his death in May 1955. He was a successful businessman in the wholesale wine industry and upon his death bequeathed a considerable sum to the Centre. In 1956 the first Townsend Memorial Lecture was held with Dr. Harlow Shapely as the invited speaker.

References.

- Obituary in the Westmount Examiner, May 27th 1955. https://numerique.banq.qc.ca/patrimoine/details/52327/4822478
- Fifty Times around the Sun. A History of the Montreal Centre. 1968.

Public Events Coordinator Karim Jaffer.

Dr. Lisa Dang

Santiago Lopez, Director of Observational Events, explaining programmes.

President, Morrie Portnoff thanking Dr. Dang

Kevin Chan, Science student introducing Dr. Dang.

Photos by Nader Daou and Russell Fralich

Explore the Universe: Pleiades and Hyades

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

Autumn brings colourful leaves and the return of two beautiful and bright celestial sights, the Pleiades and Hyades. The two open star clusters are visible to the unaided eye and spectacular when viewed through binoculars.

The Hyades and Pleiades are in the Taurus Constellation. In Greek mythology, Taurus is a bull with the star Aldebaran as the red eye. The Pleiades are known as the seven sisters and the Hyades are their half-sisters with Atlas as their father.

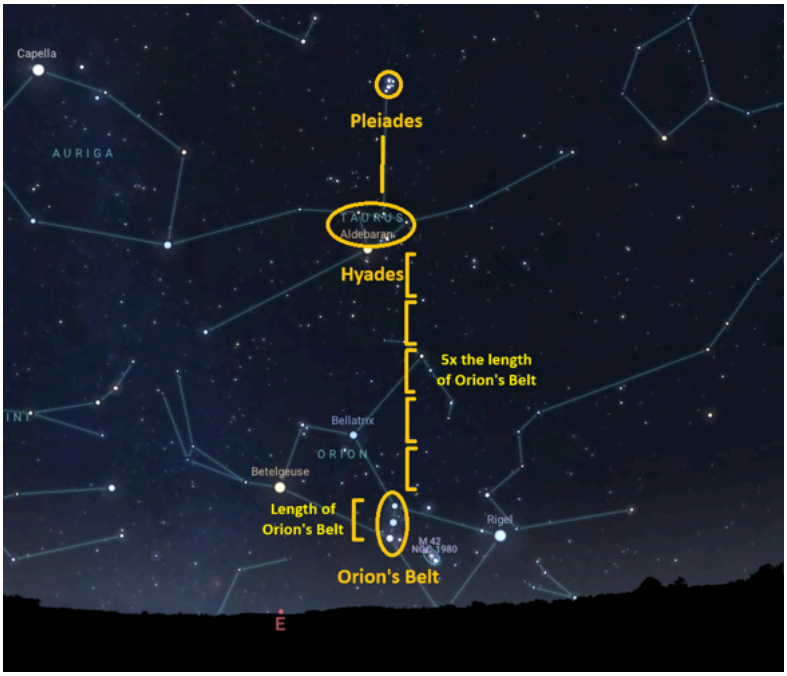
***Taurus the Bull** Image source: Stellarium-web.org*

Star Hopping

Orion's Belt is the easiest way to star hop to the Hyades and Pleiades. Use the three stars that make up the Orion's Belt.

Orion's belt points to the Hyades. Use five times the length of the belt to reach the Hyades. From there keep the same line of sight toward the Pleiades.

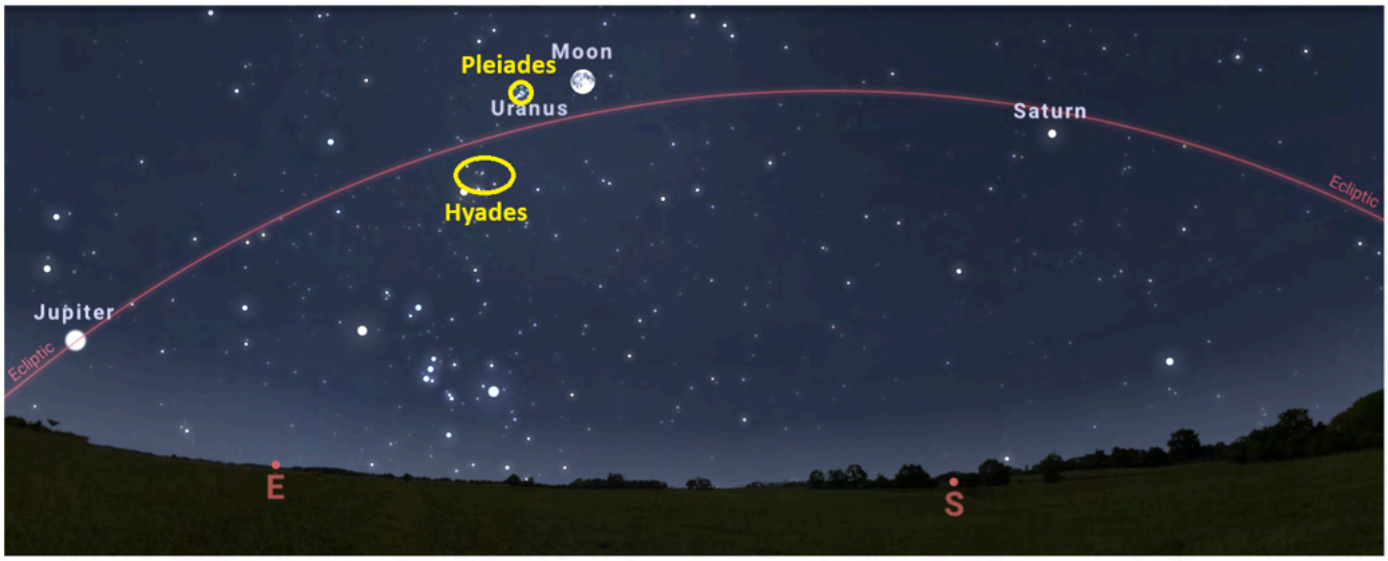
In the fall, Orion rises in the east approximately four hours after sunset. In the winter, Orion is visible in the south after sunset. In the spring, Orion is visible after sunset in the west.



Star hopping to the Hyades and Pleiades using Orion's Belt Image source: Stellarium-web.org

The Golden Gate of the Ecliptic

The Hyades and Pleiades star clusters form an asterism known as the Golden Gate of the Ecliptic. The Ecliptic is the path that the planets and the Moon travel along. The Hyades and Pleiades are located on either side of the ecliptic, and the planets pass between them.



The Ecliptic located between the Hyades and Pleiades. Image source: Stellarium-web.org

This fall and upcoming winter season will be ideal for witnessing the Golden Gate of the Ecliptic as the Moon will be passing near to the Pleiades on the evenings of December 3rd 2025, January 27th and February 23rd 2026.

December 3rd at 21:00

January 27th at 18:00

February 23rd at 22:00

The Moon near the Pleiades. *Image source: Stellarium-web.org*

Hyades

The Hyades are the nearest star cluster to Earth at 153 light-years distance and form a V that represents the Bull's forehead.

Aldebaran, the red giant star, is not part of the Hyades star cluster, since it is approximately 65 light-years from Earth.

The stars Chamukuy (Theta Tauri) and Secunda Hyadum (Delta Tauri) are both wide double stars that can be separated with binoculars.

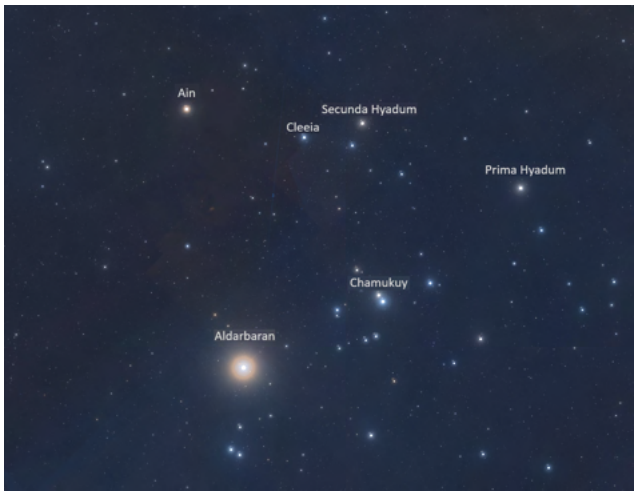


Image source: Stellarium-web

Image source: Stellarium-web

Pleiades

The Pleiades are known as the seven sisters in Greek mythology: Alcyone, Asterope, Celaeno, Electra, Maia, Merope and Taygeta are the sisters and Atlas and Pleione are the parents. The star cluster is visible to the unaided eye and has been the fascination of stargazers for millennia.

According to Wilfred Buck, a Cree Knowledge Keeper, the star cluster is a connection to the cosmos and a wormhole to an alternate reality where the Cree people originated from.

In Japanese culture the star cluster is known as Subaru, which means to unite.

Modern stargazers often see the shape of a question mark when gazing at the Pleiades.

Explore the Universe Targets

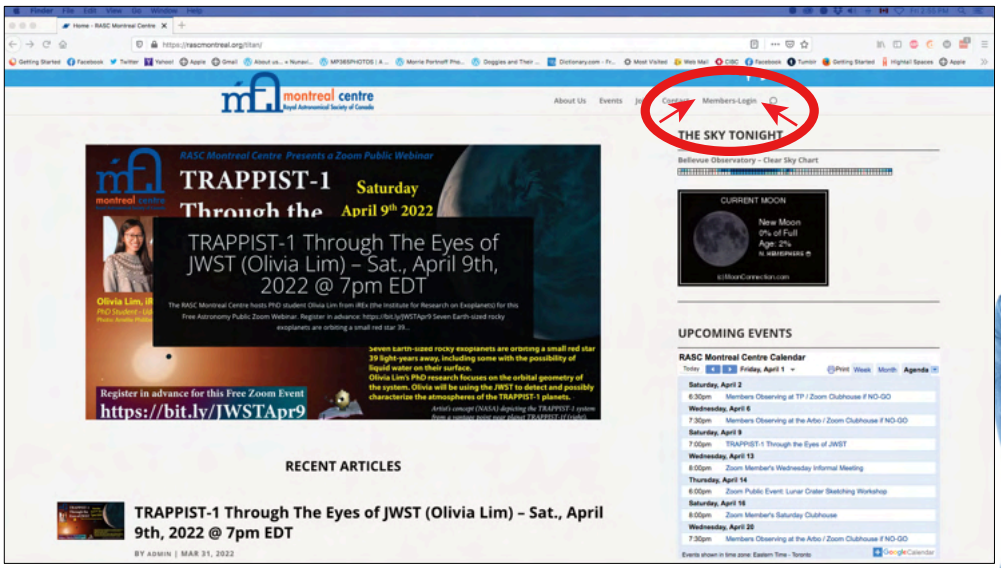
The Pleiades and Hyades are [RASC Explore the Universe Observing Program] deep sky object targets. Chamukuy (Thetra Tauri) is a double star target. Taurus is one of the constellation targets.

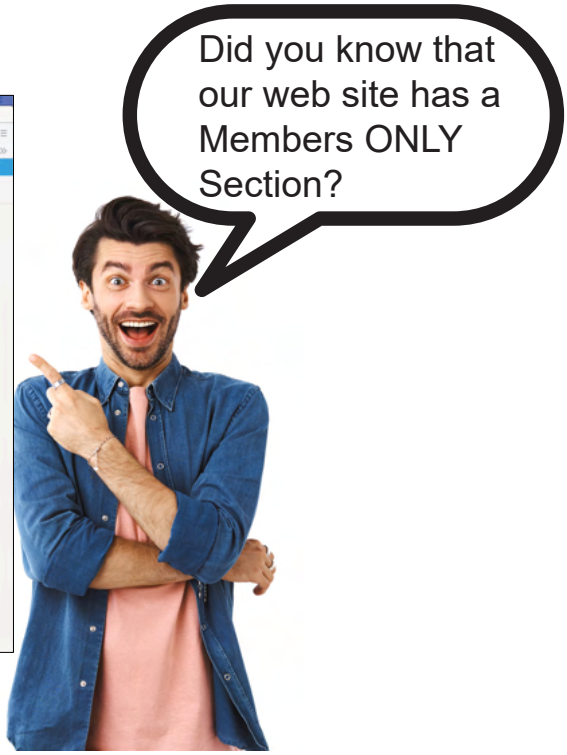
Enjoy the cool autumn evenings by stepping outside and looking up and gazing at the celestial wonders in the night sky.

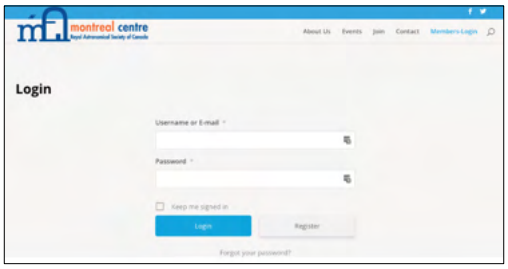
Explore the Universe is open to all. See the program at [https://www.rasc.ca/explore-universe]

Being a RASC Montreal Centre Member has its

ADVANTAGES





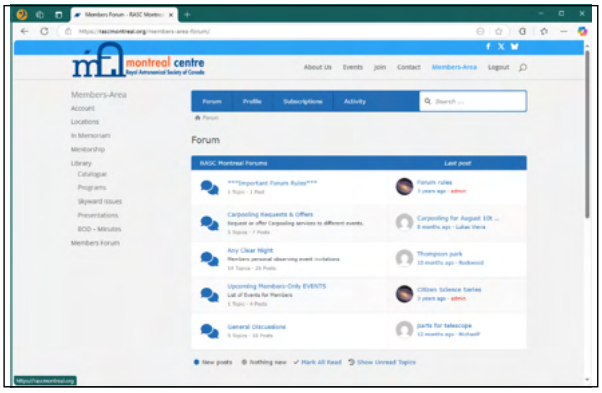


Sign Up Today and discover so much more about your astronomy club

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



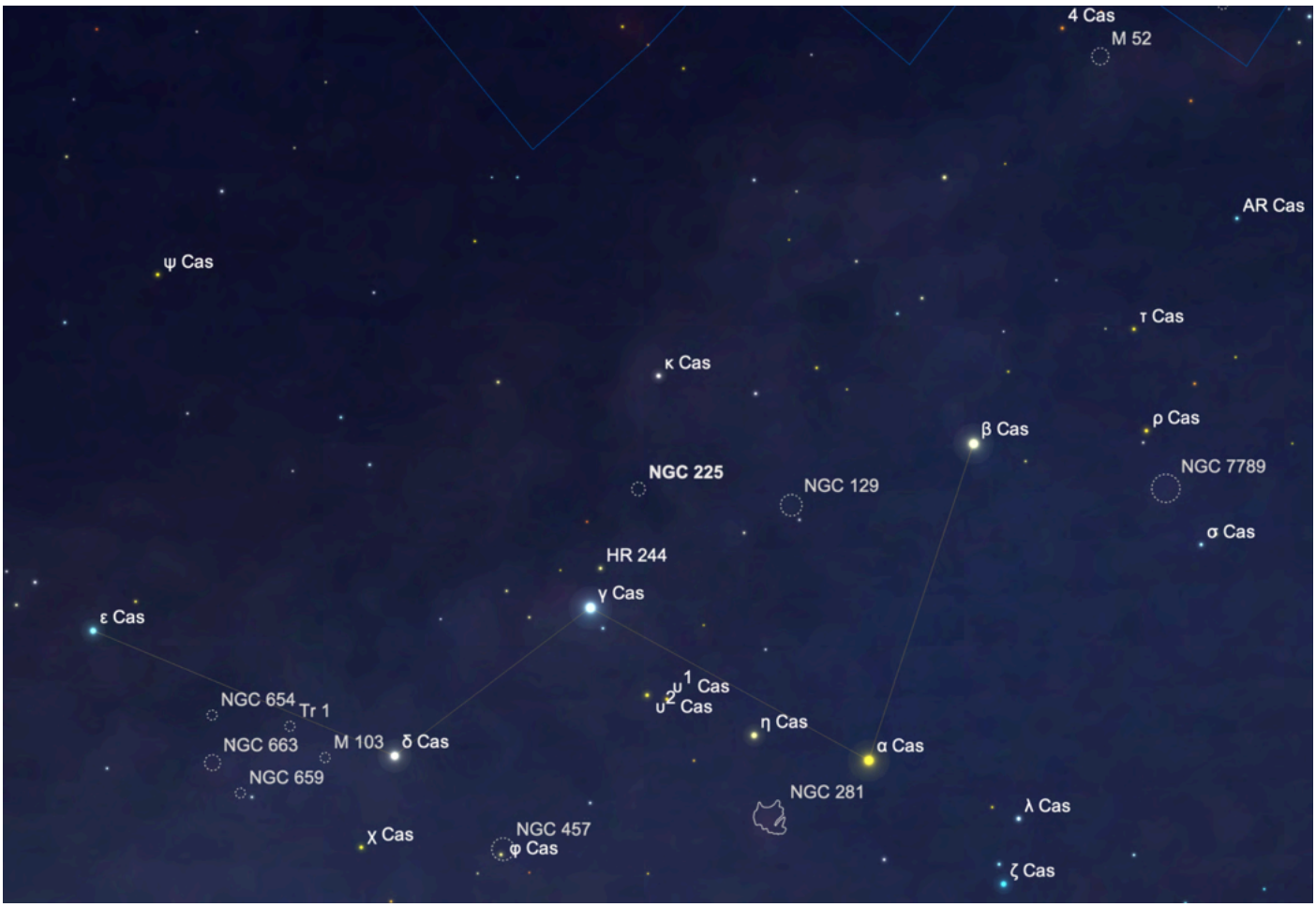
Don't have a telescope? Borrow one from the Centre.

If you are a RASC Montreal member, telescopes are available to borrow for FREE. (Donation of any amount is encouraged!) A $50 deposit is required for each borrowing, it will be returned in full upon return in good condition. To make a borrowing request, please send an email to: telescope@rascmontreal.org.

Exploring Cassiopeia's Many Gems

By: Marc Ricard[1]

Back before there were telescopes, people of various cultures would make up stories about the stars that filled the night sky. To the ancient Greeks, the five bright stars we see rising in the east on Autumn nights represented the seated queen Cassiopeia. The Lapps of northern Europe saw the outline of moose antlers. The Cree told the story of a hunter called Ponoka known for his skills, who set out to find an elk to feed his family. Elders had told him of a great elk who was seen running, but no one was brave or quick enough to kill this great elk. The hunter found large elk tracks and followed them to a small pool of water. The elk was drinking the water and did not see the hunter as he came closer. He threw his spear with great strength and struck the elk. The animal fell, and the hunter had to drag him back to camp. He cut the hide from the great elk, and it was perfect. He cut the meat and shared it with everyone in his village. They were thankful. He stretched the skin to dry and drove wooden stakes through it. Everyone in the village wanted to honour this great elk. So, the hunter worked on the hide, stripping it, softening it with care and with great admiration, he threw the skin into the sky to where the light above could shine through the stake holes.



Cassiopeia finder chart courtesy of Sky Safari

[1] *Marc apologizes. His computer died and he was not able to provide new material for this issue. This article was first published in September-October 2023.*

One of the great elk's stake holes, the middle star γ (gamma) is a variable hiding in plain sight. It brightened by a full magnitude in 1935 but has been quiet since. The AAVSO 10-star training tutorial includes a star chart that will help you monitor its brightness so you can be ready for its next outburst. You can download a free copy here: (https://www.aavso.org/10-star-training).

NGC 457, M103, Trumpler1, NGC 659, NGC 663, NGC 654 finder chart courtesy of Sky Safari.

Cassiopeia is a treasure chest filled with open clusters for deep-sky observers. Sweeping the area surrounding δ (delta) with binoculars will bring many of these celestial jewels into view.

You'll find one of the most attractive ones surrounding the 5th magnitude star φ (phi) Cassiopeia. When I viewed NGC 457 on a warm August evening a few years ago from Pointe-Claire, I saw a dozen stars surrounding bright yellow φ and its fainter blue companion in my mounted 16x70mm binoculars. You should see a dozen more through a small telescope, enough to make out the outline of the Owl Cluster's body and outstretched wings.

I captured the image of the Owl Cluster at left with an FSQ 106 and a QSI 683 from Pointe-Claire.

M103, Trumpler1, NGC 659, NGC 663, NGC 654 finder chart courtesy of Sky Safari.

To locate the following targets, centre δ (delta) and ε (epsilon) in the field of your binoculars. NGC 663 lies between them, below an arc of three 6th mag stars. Caroline Herschel discovered this cluster on September 27th, 1783 with a 4.2-inch telescope that her brother William made for her. From my backyard in the Laurentians, NGC 663 is an oval-shaped glow in my 10x50mm. My mounted 16x70mm reveal a small heart-shaped star cloud with an uneven bluish glow, that's punctuated by two pairs of 9th magnitude stars. Curving rows emanating from those two pairs of stars are a stunning sight at 127x in my 15-inch.

You'll find M103 lying between NGC 663 and δ (delta). It's a small but bright haze surrounding a 7th magnitude star in my 10x50mm. Its two long rows of bright stars remind me of a church steeple through my 16x70mm. But this triangular-shaped cluster of 50 stars looks more like a Christmas tree in my 15-inch. With a pretty orange star in the middle and a bright 7th magnitude star on top, it's a pretty sight at 216x. The unusual open cluster Trumpler 1 is located less than a degree north of M103. This minuscule cluster is an unremarkable smudge in my 16x70mm. But through a small telescope, it will resolve into a remarkably straight and closely spaced row of four 11th magnitude stars. A second fainter row, slightly askew to the main one should appear if you increase the magnification.

Follow the arc of 6th magnitude stars near NGC 663 northward and you'll see the faint glow of NGC 654 surrounding a 7th magnitude star in your binoculars. Its surface is dotted with faint little pinpricks of light in my 16x70mm. Thirty magnitude 10-12 stars are visible in my 15-inch at 216x. Now extend the arc southward and you'll come to a little mist located near a pair of 6th and 7th mag stars. The open cluster NGC 659 brightens slightly toward the middle but is smaller than NGC 663 and NGC 654 in my

16x70mm. Unfortunately, it's a bit too faint for my 10x50mm. My 15-inch resolves thirty magnitude 10 to 14 stars scattered east-west around a prominent trapezium of stars at 216x.

M52, NGC 7789, σ, η, and NGC 281 finder chart courtesy of Sky Safari.

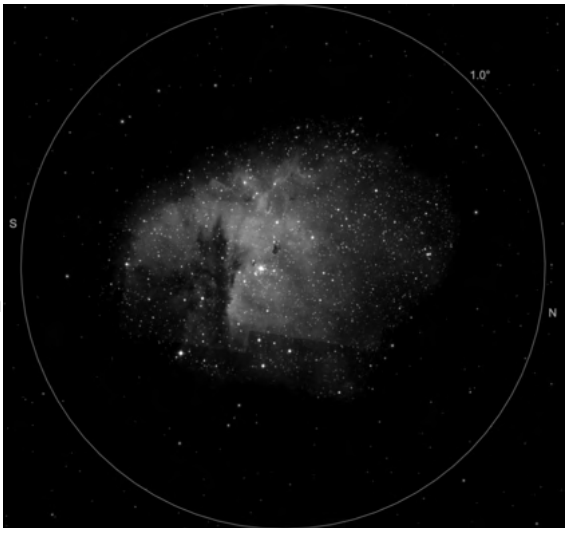
To locate M52, utilize α and β Cassiopeia as guideposts and place them at each end of the field of your binoculars, then hop one field upward past β and you should see a faint patch lying along the top edge of the field near the yellow star 4 Cassiopeia. But the stars that make up this cluster are faint, so spotting it in binoculars will be difficult from light-polluted skies. Nevertheless, a 3-inch refractor should be up to the challenge.

NGC 7789 is one of the seven other objects that Caroline Herschel discovered in 1783. On October 30th she wrote: "Between σ (sigma) and ρ (rho) a fine nebula, very strong". It's only a faint mist in my 10x50mm but its uneven glow in my 16x70mm gives it a striking 3D look. This rich open cluster stands out better at my lowest power (60x) in my 15-inch. The curving arcs of stars along its periphery intermingled with the dark lanes near its centre gave rise to the moniker: Caroline's Rose.

σ (sigma) Cassiopeia is a magnitude 4.9 double star lying 1° south of NGC 7789. The bright 5th magnitude yellow-white star contrasts nicely with its fainter 7th magnitude companion lying 3" (arc seconds) away.

Bright η (eta) Cassiopeia is one of my favourite doubles. This white 3.5 magnitude primary and tawny-gold 7.5 magnitude secondary are separated by a generous 13" and will make a dazzling display through your telescope.

The next time you're touring Cassiopeia and you're looking for a challenging target, centre your telescope on NGC 281. This large and faint emission nebula is a favourite of astro imagers but, an ultra-high contrast (UHC) or an OIII filter can reveal most of what can be captured with a camera. The brightest portion of the Pacman Nebula lies above the 8th magnitude multiple star you see in the centre of the image above. Use a hood or cup your hands around your eyepiece to block any extraneous light from entering your eye. Then slowly scan the field over several minutes through an eyepiece with a true field of 1°. I was able to make out most of the structure including the dust lane shown on the image on the right with my 15-inch over ten minutes, despite the poor transparency. With a suitable filter and patience, the Centre's 16-inch should be able to do the same.



Clear skies!

See a table of Marc's gems in Cassiopeia on the next page. Ed.

Object	Type	Magnitude	Size or separation	Position angle	Distance Light-years	Right Ascension	Declination
γ (gamma)	Variable	1.6 – 3.0			550	00h 56m	60° 42'
NGC 457	Open cluster	6.4	20 arc min		7,900	1h 19m	58° 16'
NGC 663	Open cluster	7.09	14 arc min		7,900	1h 46m	61° 14'
M 103	Open cluster	7.4	5 arc min		7,200	1h 33m	60° 39'
Trumpler 1	Open cluster	8.1	3 arc min		8,100	1h 35m	61° 16'
NGC 654	Open cluster	6.5	5 arc min		7,900	1h 44m	61° 53'
NGC 659	Open cluster	7.9	5 arc min		6,300	1h 44m	60° 40'
M52	Open cluster	6.9	15 arc min		4,600	23h 25m	61° 35′
NGC 7789	Open cluster	6.69	25 arc min		5,900	23h 57m	56° 42′
σ (sigma)	Double star	4.88 – 7.24	3.1 arc sec	326°	1,500	23h 59m	55° 45′
η (eta)	Double star	3.45 – 7.52	13.6 arc sec	327°	19.4	00h 49m	57° 49′
NGC 281	Emission nebula	7.4	35′ x 30′		4,100	00h 53m	56° 36′

Table of Marc's Gems in Cassiopeia

More Auroras

By Alexei Weins. *September 15th. The Aurora Hunter Strikes Again!!*

(Got this on Bishops University's campus last night).

By Dominique and Gerald MacKenzie.

In Lac Supérieur, QC.

Rockets, Rockets & More Rockets

By: David J. Shuman and Alexei Weins

As many of you know, not only do I enjoy the night sky, day sky (solar), photography, but also other things that have to do with the sky and space.

Rockets.

Ever since I grew up (in the Apollo Days) I have been fascinated by space travel, exploring other worlds, and the ships that would get us there. The mighty Saturn V rocket is one such example. However, there are many more systems, from small rockets to medium sized ones, that are used to not only ferry astronauts to space but mainly for satellite and space probe deployments. Enter: Cape Canaveral. Yes, THE spaceport which launches quite a few of today's commercial/military and astronaut missions to space. Oh, and by the way, let's not forget the Space Shuttle era.

As my family used to have a condominium in north Miami, Surfside (a small piece of paradise in Dade County), I used to travel and stay in Florida on quite a regular basis. This gave me an opportunity to travel and explore the Kennedy Space Center (KSC). Often is not enough! On every trip I would discover a new display, something historical, something awesome. Yes, I witnessed: four Space Shuttle landings (one at which I had News Media Credentials in July 1994 — STS-65); A midnight Delta II launching a second generation GPS satellite (the loudest thing I've heard and believe me, as a professional Pyrotechnician, I know loud!); and finally, an Atlas II – Hotbird TV Satellite launch in July of 2000.

So it was much to my surprise that a fellow young member of the Centre came up to me to talk "shop". Yes, there is another "rocket nerd" amongst us!

Alexei is that member, our current Director of Social Media. He has a passion for launches, rockets and space travel as well. Closely following the current Artemis Moon program, having seen the uncrewed launch of Artemis I in Florida a few years ago. Also having seen some SpaceX Falcon 9 launches as well.

So, what do? We've both been saying that it's time for a road trip together to catch some launches. This was the summer. Having some time in between his university semesters and I, a bit of time off from work, we decided to go to Florida this past August. He was allowed to take off from August 10th to the 24th. I also asked for those two weeks off. He was able to have the use of his family's SUV. I also have the E-ZPass® toll system so that travelling along the I-95 was efficient. We decided to stay in Ormond Beach, just north of Daytona, and right on the ocean. A small boutique hotel, recently renovated, and minutes to restaurants, and access to the all-important I-95. For those not familiar, the I-95 highway connects most of the Eastern Seaboard States from New Jersey all the way to Miami Florida. It takes about two days to travel so we stopped in Virginia, both on the way down, and back, with a layover, to visit the Smithsonian's National Air and Space Museum in Washington DC (of course — more rockets & planes on display).

Since the hotel was quite inexpensive, the issue for us was that the Kennedy Space Center Visitors Complex was about an hour each way from our hotel. We did a fair amount of driving. Florida is BIG!

So, about those rockets. SpaceX, as many of you know, launches batches of Starlink satellites and other cargo on a very regular basis. Whereas a launch in the past may have occurred once a month in a busy year, now there are SpaceX launches every few days from the cape. Then there is ULA (a partnership between Lockheed-Martin and Boeing) who fly the Delta IV (now retired) and Atlas V rockets. ULA has a new monster, though, the Vulcan-Centaur. This will phase out the Atlas V in a few years. The only issue, they've had only two prior demo flights, one in each of the last two years. So, what would be the chances that we would see one of those take off? – There was one being assembled for takeoff in late July – Figures! This was not a demo flight but a mission for the USSF, the US Space Force (part of the United States Armed Forces Department of the Air Force) — a dual military/GPS satellite system — USSF 106.

That mission was taking time to integrate. A rocket is normally shipped from its manufacturing facility in pieces, usually on barges to the KSC turn basin (right near that famous count-down clock). Then "stacked" on the pad before being rolled out to the launch tower/flame trench. So, there might be hope for us that it would be delayed right into out trip. Then the announcement came that it would take off on Sunday at 7 p.m. A sunset launch! – Problem being that we would only arrive at the hotel by that time, and exhausted. Hmmm….

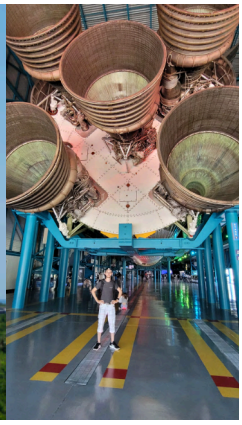
We headed out on our trip, and while we took turns driving, we would look up the latest status of launches, as this changes frequently. Traffic, weather, technical issues "valves" is a big one. – Guess what? Not only was the Vulcan Centaur delayed until Tuesday night (the Perseids night) but a much-delayed SpaceX Mission for Amazon Kuiper Internet Satellites (yes, Jeff Bezos wants his own internet in the sky as well) was delayed until Monday morning.

So, all of a sudden, we had a busy schedule packed with three launches within a few days, a potential barge return of the landed SpaceX booster at Port Canaveral, a day at KSC museums, and an annual Space Force open house featuring collectibles and displays from over the years.

We saw the first Launch of a SpaceX Falcon 9 from Playalinda Beach, just north of the KSC Launch complex (this is the closest the public can get to a launch without special passes, just about 5 km north of the towers). It took off right on time around 8 a.m., what a spectacular sight! Arching over us toward its intended inclination for a booster landing off North Carolina's shore, it created an exhaust plume and "shock" diamonds in the tall flame as it ascended. We saw the Max-Q condensation as it went through the sky. After all of this was over, it was getting HOT. Florida in the summer is hot, regularly over 40 °C every day, complete with powerful

thunderstorms in the late afternoon. We had a celebration breakfast at Denny's in Titusville.

We could see the top of the Vulcan-Centaur in the vertical integration tower from our point of view, along



with the 50 story, HUGE, SpaceX Starship tower being constructed for future Moon/Mars missions to be flown daily from KSC. SpaceX is also building three more towers for the future.

We visited the KSC museum, the bus tour took us to Gantry-39, a new exhibit overlooking the famous Complex 39A and B launch pads where the Saturn V and Shuttles flew from.

The bus tours that used to take visitors to the USAF side of Cape Canaveral no longer exist. I was saddened about this as I wanted Alexei to see some of these attractions. We were told that one could simply go on Wednesdays at a certain time for free admission — however that is no longer the case. You now need to hire a separate tour company and have a background check for foreigners. It takes two weeks for this and we would be home by then, so we missed this part of our intended itinerary. I'm glad that I visited these areas many times in the past, most recently with Paul and Alex on a trip after the 2017 Solar Eclipse in South Carolina. These are the old Mercury Redstone and Atlas pads that allowed

John Glen, Allan Shepard, and Gus Grissom to reach space for the first time. The Saturn I rockets were also launched there and is the site of the infamous Apollo I pad fire

Not to worry, as we had a very busy itinerary. The Vulcan Centaur launch was set for Tuesday night. We had to scout out a good vantage point. Originally, we were hoping to purchase launch viewing passes from KSC, however, there were none available for any of these flights. We found out later that they only really offer these for sale on rare occasions: NASA missions, and crewed flights. So, we settled on an area in a small park in Titusville about 12 km in direct line of sight to the ULA tower. This would provide gorgeous night views of the launch with the flames reflecting off the river. It was then delayed right up to the end of the launch window, at 8 p.m. — so no more sunset launch. We set up slowly claiming our two spots at the riverfront. I used my Sony Alpha 6300 filming in UHD, my William Optics SpaceCat 51, and my Sony FS 700 with Atomos Inferno film recorder in DCI 4K (a true cinema 4K picture — much wider than normal TV). This would allow me to film the launch statically then manually track the rocket with my pan-head cinema tripod during the ascent. Alexei helped with other cameras. The more footage/coverage the better. After all, that's what we came for! (besides the ocean, beach and Disney's Animal Kingdom).

The launch was a sight to behold! Brilliant white flames from the four Northrop Grumman 63" strap-on side boosters, a rare event as this was the first time ULA flew the Vulcan-Centaur with four of these boosters (it can hold up to six). This was a seven-hour trip to the geostationary parking orbit for these GPS satellites. The boosters were jettisoned in an "X" pattern about $2^{m}30^{s}$ into flight subsequently we could see the blue flames from the two BE-4 Methane engines from Blue Origin. ULA contracted Blue Origin (Jeff Bezos') company to replace the older Russian RD 180 engines. These are designed to burn cleaner methane as opposed to kerosene). After that it was a tiny white spec in the night sky, appearing like a star, on its way.

No rest for the weary as we had another SpaceX morning launch at Playalinda Beach and a barge return to spot in the afternoon in the next two days.

Using a maritime vessel tracking app and chat GPT, Alexei was able to pin down the approximate hour the barge was expected back from the coast of North Carolina. Known as Marmac 602, or "A Shortfall of Gravitas" as Elon Musk calls it, the barge with the rocket booster that we saw take off on Monday morning would pass in front of Port Canaveral in the early afternoon. We set out to film this as well. Boy! did this deliver. It was awesome to witness the booster return right in front of us. We saw turtles and fish

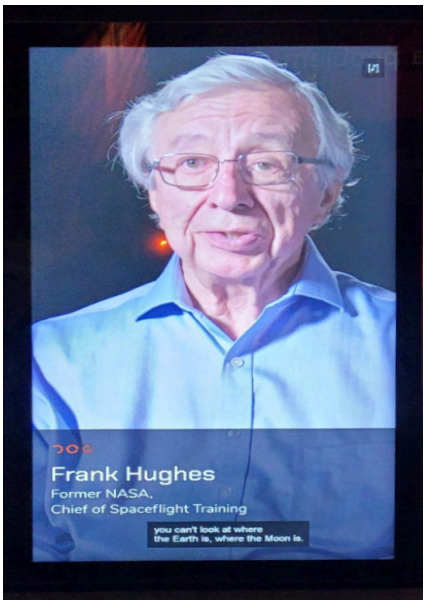
and met some people at the pier. It was HOT! Drinking lots of fluids to remain hydrated. At one point I was worried about our cameras, but they all seemed to function well. Thank Seven-11 for those 99 cent BigGulps!

Later that week, all launches were suspended due to Hurricane Erin passing the Florida coast. Although this only impacted ocean conditions for us, we were lucky in that the weather was the usual. This gave us a much-needed break. We visited Disney's Animal Kingdom as they had new attractions that I had not

seen, since I was last there in 2000.

Lastly, there was a rescheduled launch from SpaceX with the X-37B Boeing Spaceplane. A spy mission. This would be a midnight launch and a rare booster return, landing at the Cape. Wow! What a way to end our trip with a bang! A sonic bang that is! That was by far the loudest launch we saw, and after seconds, the sonic boom of the F-9 booster landing shook our bodies. A loud thump! Then the cracking of

the return burn. Weird as the ship had already landed seconds before. This time we found a sweet spot with direct line of sight 12km from the launch tower, Complex 39A, and miles to the landing zone. We



even got to see blue bioluminescent water off the causeway. When you throw a stone in the water, it glows blue; I've had heard of this but never seen it for myself.

Leaving, hours later around 7 a.m. the next day, we stopped in Fairfax VA, so we could visit the two Smithsonian museums. The Space Shuttle Discovery is on display, the Enola Gay, a Concorde, Goodyear Blimp Gondola, Lunar Lander, and many other significant historical artifacts, including the Apollo 11 capsule, which always seemed to be on loan when I visited in the past. We even saw a familiar face at the Apollo display. Frank Hughes appeared in a video kiosk talking about Apollo's history. Frank gave an awesome in-person presentation on the history of training the early astronauts for the Apollo missions at our library in the spring.

On Saturday November 29th Alexei and I will be presenting the rocket launch/landing videos from our trip. The photos in this article are just stills from my phone and screenshots from some of the videos.

Alexei was a fun companion to be with, and we seem to share many of the same interests!

By Russell Fralich. *Almost full Harvest Moon, October 5th.*

Thrill of the Night

***By David H. Levy**, photos from Levy archives.*

It was late in the afternoon of 19 July, 1963. I was a 15-year-old patient, at the time, at the Jewish National Home for Asthmatic Children in Denver, Colorado, and had begun my association with the Denver Astronomical Society. The people running the Asthma Home had generously granted permission for me to return home for a week in order to see a total eclipse of the Sun that would occur on Saturday, July 20.

Late that afternoon, the day before the eclipse, Dad awoke from a nap in a terrible mood. He turned toward Mom and said, "All David cares about are his damned stars."

Obviously I was upset to overhear his words but I let them pass. His mood improved, and the next day we three saw a spectacular total eclipse of the Sun. Having a lifelong curiosity about history, Dad was flabbergasted when the eclipse, which had been predicted millennia earlier by the ancient Greeks, began right on time, to the second. The saros[1] goes all the way back to the Chaldean astronomers in the centuries BCE, and was understood by Ptolemy, Pliny, and Hipparchus.

The only issue we had was at the start of totality. I took off my eclipse glasses, and my parents had fits telling me to put them back on. I had a choice. I could spend the sixty seconds of totality arguing with them that it is perfectly safe to witness the total phase without protection, or I could just put my glasses back on.

I put my glasses back on. Then I turned away, took them off, and enjoyed the total eclipse.

Years later, Dad and I were walking together. "Do you remember," he enquired, "when I awoke from my nap and said that all you care about are your damned stars?"

I admitted that I did remember. "May I take those words back?"

"Why? You were right. That was all I cared about back then."

"But if I had had the faintest idea what you were going to do with your damned stars, I would have been so much more supportive." (And he said that to me before I found my first comet.)

Kernny Wiener and family and me and Mom and Dad

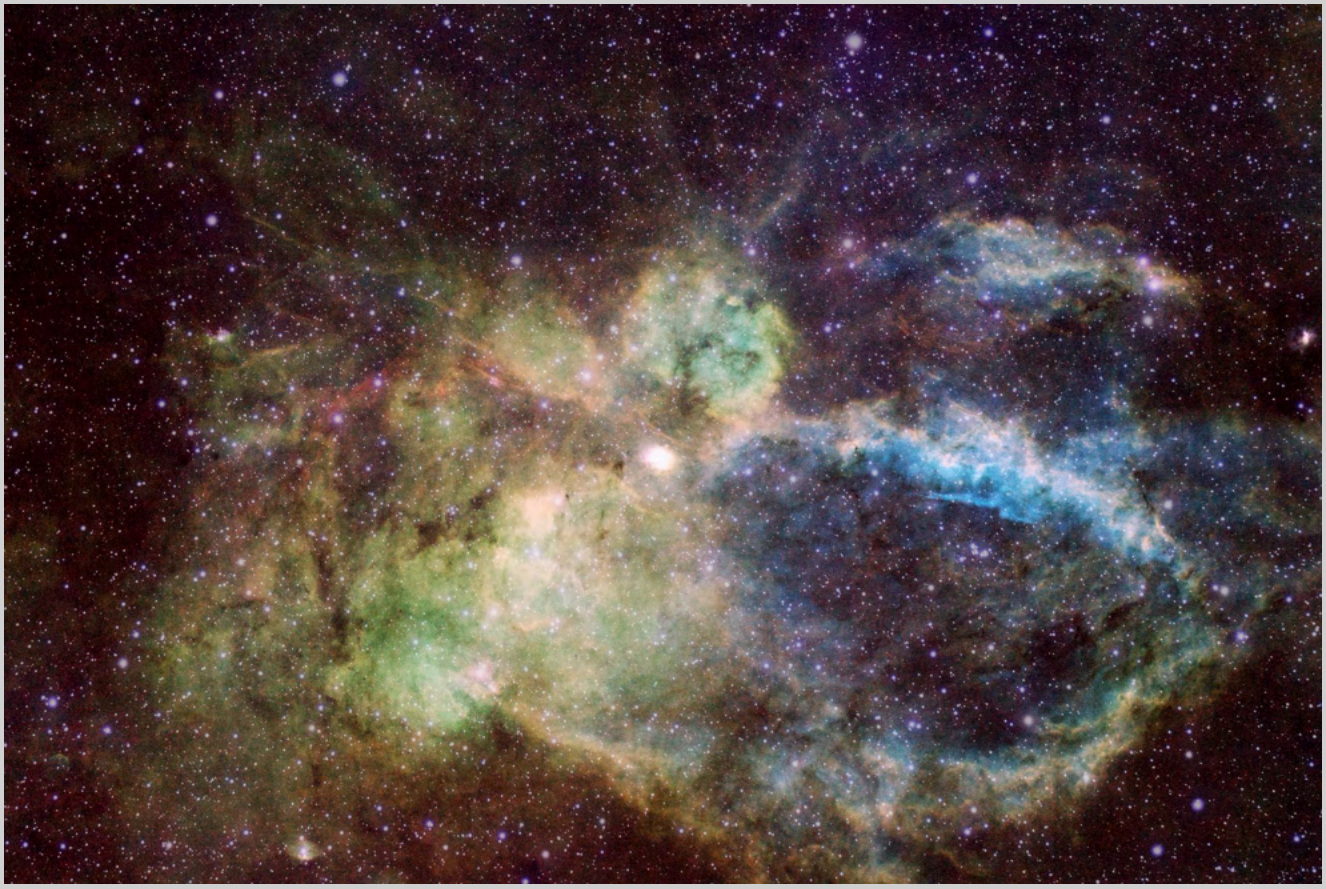
In the 41 years since I found that comet, I have had more joy than I can imagine. Never have I gone out to my observatory to look at the stars, and not felt better, far better, when I went back inside. My

[1] The **saros** is a period of exactly 223 synodic months (18 years 11 days and 8 hours), that can be used to predict eclipses of the Sun and Moon. One saros period after an eclipse, the Sun, Earth, and Moon return to approximately the same relative geometry, a near straight line, and a nearly identical eclipse will occur, in what is referred to as an eclipse cycle. Every eclipse has an associated saros series and all succeeding or preceding eclipses have a different saros series associated with them - as the eclipse of the same series occurs or occurred with a gap of one saros only. Solar and lunar eclipses have different saros series. Courtesy Wikipedia.

parents, and my wife, are gone, but I have a daughter, a son-in-law, two grandchildren, and a great grandson. When they ask me a question—even for a second, the charisma intensifies. And it is not just observing. My relationship with many astronomy societies, including the Denver Astronomical Society, which has continued over the years, has recently intensified. I am their poet laureate and get to share a poem at the start of their meetings.

Whether I am alone or with a group of people, for me, nights under the stars are an indescribable thrill.

Wendee, Nanners, Kabanners, Summerkins and Mom.



By Greg Beaton. *After 3 months (9 session - over 600 images) of collecting data and fixing issues. I finally finished this SHO composite of Sh2-157, the Lobster Claw Nebula. The colour is a bit different on the phone but close. The processing took a few days because it's my first time doing a true Hubble SHO colour palette. On to the next target! PS: It looks like a bit of a hot mess, but isn't that what a nebula is? PPS: I re-edited to clean it up a little — reduce brightness and increase contrast.*

Comet 3I/ATLAS

By Nader Daou, *Director of Outreach.*

Canada's Window into an Interstellar Visitor

As we approach the end of 2025, amateur as well as professional astronomers across Canada and the world turn their eyes, telescopes and instruments to the most extraordinary celestial object of the decade: the Comet 3I/ATLAS. 3I/Atlas is the third confirmed interstellar object to enter the solar system. Unlike the periodic comets we are accustomed to see and have learned to predict, interstellar objects such as 3I/Atlas are one-time visitors, passers-by from another solar system. The hyperbolic trajectory of 3i/atlas confirms this designation. For observers in Montreal, and across Canada, this is a rare opportunity to study a true "alien"!

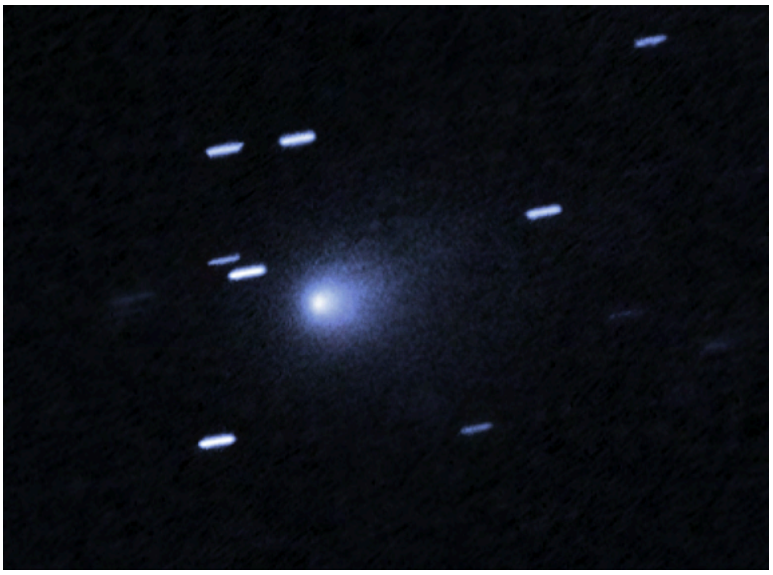


Image: NASA, ESA, David Jewitt (UCLA); Image Processing: Joseph dePasquale (STScI)

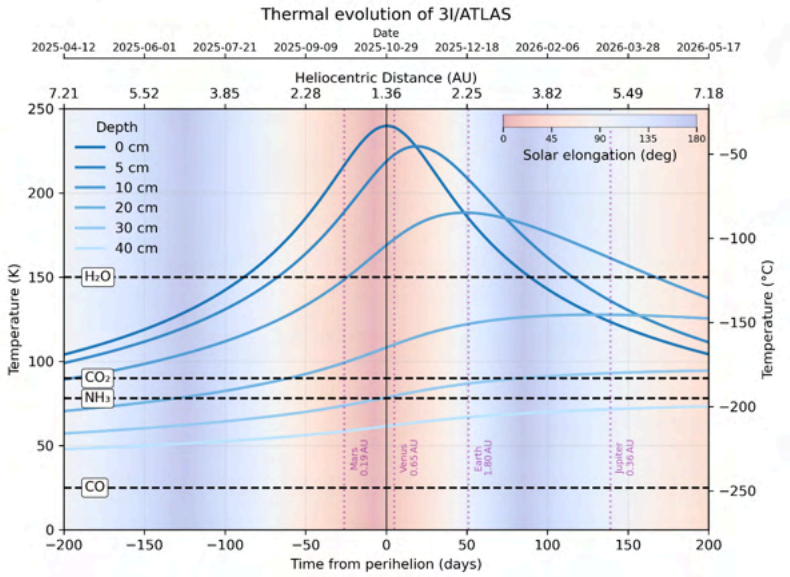
Origins and Trajectory: What Makes 3I/ATLAS Unique?

It was on the first of July 2025, that 3I/ATLAS was discovered by the ATLAS survey telescope in Chile (hence the name, "3I" being the third confirmed interstellar object). Initially, it was mistaken for a regular asteroid, but later trajectory calculations confirmed that it was too fast (60km/s) to be bound to the gravitational pull of the sun. It was also on a hyperbolic path, which means, it was on a one way road out of the solar system.

Despite being the third interstellar object, it is larger that the other two: 'Oumuamua (2017) and Borisov (2019). Estimates from Hubble and JWST suggest a nucleus between 440 meters and 5.6 kilometers in diameter. Yes, I know, huge error margin, but remember that an object this size is extremely hard to measure with the instrumentation we have today, and its "coma" makes it even more difficult to pinpoint its core. Its mass is estimated to exceed 33 billion metric tons, roughly equivalent to a dozen Mount Everests.

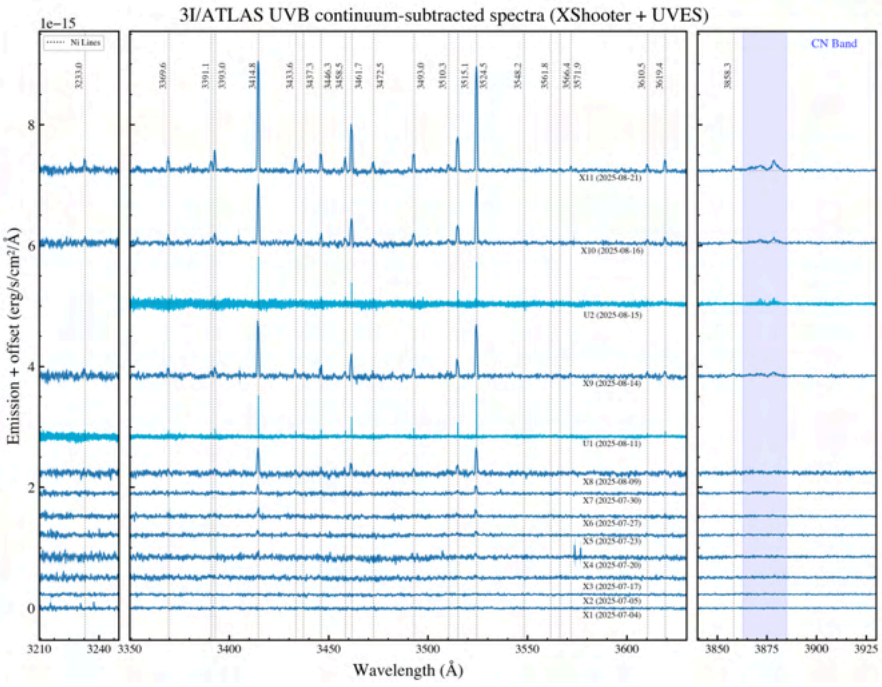
What We Know So Far: Chemistry, Structure, and Surprises

Image analysis from Hubble, JWST, and ground-based telescopes has revealed a teardrop-shaped coma and a growing tail, which is not unusual for solar system comets. However, 3I/ATLAS had many surprises in store:



Thermal model of 3I/ATLAS during perihelion passage, showing subsurface temperatures (0–40 cm), volatile sublimation thresholds, solar elongation, and planetary encounters. (Credit: Wikimedia Commons licensed under CC BY 4.0)

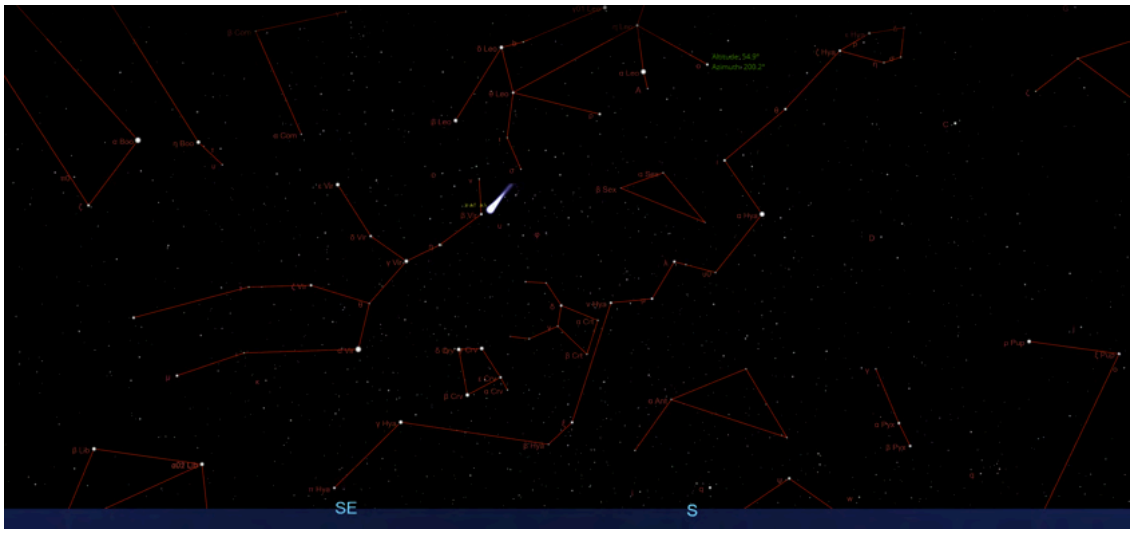
- Green glow: During the September 7 lunar eclipse (which we all missed in North America), amateur astronomers in Namibia (Michael Jäger and Gerald) reported a faint green glow from the comet. This was very unexpected, since earlier spectral analysis did not show any traces of diatomic carbon molecules (C_2), Cyanogen molecules (CN) or any other carbon-chain molecules, which are typically responsible for green fluorescence under UV radiation. This emergence of green glow suggests that a delayed activation of volatile material (material that sublimates into gas when heated) lurked below the reflective surface. These materials most likely contained the molecules C_2, CN, or longer carbon chains responsible for the green emissions.



UV spectroscopy of 3i/ATLAS showing, among others, a clear CN band (credit: Wikimedia commons licensed under CC BY 4.0)

- Volatile Release and Compositional Evolution: JWST's infrared spectroscopy revealed a coma dominated by carbon dioxide, with trace amounts of water vapour, carbon monoxide, and carbonyl sulfide. The unusually high CO_2-to-H_2O ratio suggests that 3I/ATLAS formed in a cold, chemically distinct protoplanetary disk, possibly richer in CO_2 than those that shaped our solar system comets. This supports its interstellar origin and offers a rare glimpse into the diversity of cometary chemistry across star systems.

- Surface Erosion and sublimation dynamics: The teardrop shape of the comet's coma, and its asymmetric tail, point to anisotropic outgassing. In simpler terms, the comet is not releasing gases from the sublimation of layered material equally across all its surface. There seems to be more localized emissions, as the core rotates, causing unequal erosion and non-uniform mass loss. In addition, the spectroscopy showed broadening lines in the CN and CH bands, suggesting high velocity emissions (in the range of 1.2 km/s), which is significantly higher than any observed in solar system comets.



3i/ATLAS on December 4, 2025 at around 5:00am as seen from Montreal (Data and Image courtesy of TheSkyLive.com)

Observing from Montreal and Across Canada

Visibility Timeline

- **Late October:** By the time of publication of this edition of Skyward, the comet will have reached perihelion (closest to the Sun), making it temporarily unobservable due to solar glare. However, it will re-emerge from behind the sun soon enough.

- **Early December:** By early December the comet will re-emerge and become more visible in the morning sky, for a very limited time before sunrise as it will be very low above the horizon.

- **Mid-December to January:** Canadian observers, this will be the perfect viewing window especially in the wee hours before dawn and within astronomical twilight.

Where to Look

- **Constellation:** 3I/ATLAS will pass through Sagittarius and Capricornus, low in the southeastern sky from Montreal.

- **Altitude:** Expect low elevation angles just between 10° to 25° above the horizon. Find observation sites that are open with clear view toward the southeast.

Equipment Recommendations

- Naked Eye: Unlikely to be visible without aid due to its distance (~270 million km at closest Earth approach).

- Binoculars (10x50 or better): May reveal the coma under dark skies. Those are heavy binoculars, so a tripod (or monopod) would be highly recommended.

- Telescope (6” or larger): If you wish to see the actual nucleus of the comet and more details of the tail structure, you will need at least a 6-inch aperture telescope with good optics.

- Camera Setup: Use a DSLR or mirrorless camera with a telephoto lens of at least 200mm focal length, paired with a tracking mount. If your trackers allow comet tracking (through uploading the comet’s ephemeris) then long exposures (60 to120 seconds) will be possible, however, for most trackers, limit your exposure to 30 seconds and below. Either way, you should be able to capture the tail and coma.

Imaging Tips

- Stacking Software: Use astrophotography stacking software to combine multiple exposures.
- Filters: A green filter may enhance visibility of the coma’s emissions.
- Timing: Shoot during astronomical twilight for best contrast.

Scientific Campaigns and Canadian Contributions

Both the NASA and ESA have mobilized a fleet of spacecraft to observe 3I/ATLAS:

- Mars Orbiters: ESA’s Mars Express and NASA’s MRO captured high-resolution images during its close pass to Mars in early October.
- JUICE Mission: ESA’s Jupiter Icy Moons Explorer will monitor the comet throughout November.
- JWST & Hubble: Provided early spectral data and size estimates.

Canadian astronomers are contributing via:

- Gemini North (Hawaii): Canadian time allocation is being used for ground based spectral analysis.
- Amateur Networks: Many amateur astronomers, including RASC members across the country will be imaging and sharing data with international collaborators.

Why It Matters: A Glimpse into Alien Chemistry

So, what’s the big deal, and why the buzz? Well, 3I/ATLAS, being confirmed as an extra solar system object, offers a rare opportunity to study materials formed in a different stellar nursery. Its material

composition, the way it is eroding under the heat of the solar radiation, and its unusual spectral emissions may shed the light on many questions:

- Planetary Formation: What kinds of ice, dust, organic compounds, and other material exist in extra solar systems? And how do they compare to what we know about the composition of the comets and asteroids from our own Kuiper belt and Oort cloud?

- Survivability: How do these interstellar travellers preserve their structural integrity and hold on to their volatile substances during multi-million-year travel through interstellar space?

- Comparative Chemistry: Comparing extra solar system comet to the ones we know originated in ours, can help us determine whether there exists a common pattern to the evolution of comets in the universe and maybe draw a template of comet formation and ageing.

Final Thoughts

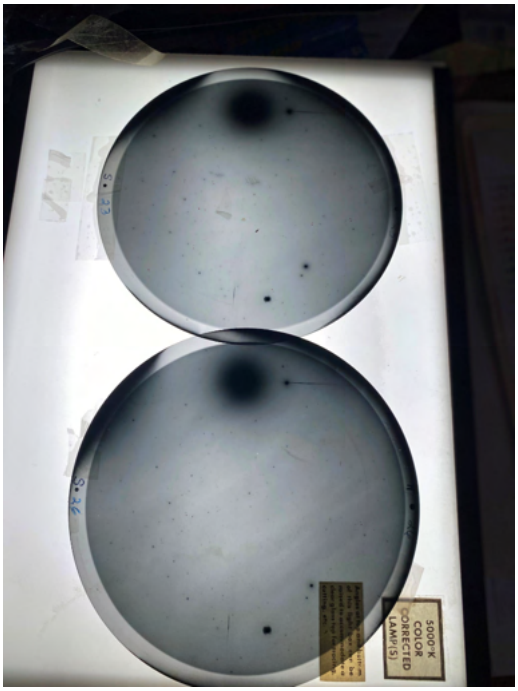
Comet 3I/ATLAS in passing through, but not merely! It is a rare event. An ambassador from another solar system. In it are the fingerprints of the chemical composition of a distant stellar nursery, where stars and planets form, live and die. For Canadian observers, it's an opportunity to probe this visitor for all it can offer in knowledge, or in awe, whether visually observing, imaging, or analyzing its spectrum. Prepare yourself for an early morning observation, warm clothing hot beverages, and most importantly, and undying curiosity to explore.

Overflow crowd looking in at the Observe the Moon presentation at the Arbo. Photo by Paul Simard

Extinction by Multiple Impacts?

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

Thirty-two years ago, Carolyn and Gene Shoemaker and I discovered a comet that was eventually named Shoemaker-Levy 9. It was the ninth periodic comet that we found together, although there were a few other non-periodic comets that we also located, plus the nine other comets I have found on my own since I began my comet search in the fall of 1965. The discovery of this particular comet and its subsequent collision with Jupiter, coincidentally my favourite planet, were the most important parts of my life, second only to my meeting Wendee. Sixteen months after our discovery the 21 pieces of this shattered comet collided with Jupiter in one of the most decisive science stories of the twentieth century. I may not have been aware of how significant this was until, at this year's Adirondack Astronomy Retreat, I watched the July 16, 1994 press conference during which Gene, Carolyn, and I tried to express the significance of this event. I remembered how much smarter I might have been back then, being able to speak in complete sentences, compared to my waning personality now. What I was not aware of back then was that what we were witnessing might have been an example not only for our own lifetimes but for the vastly larger history of the Earth we live on.



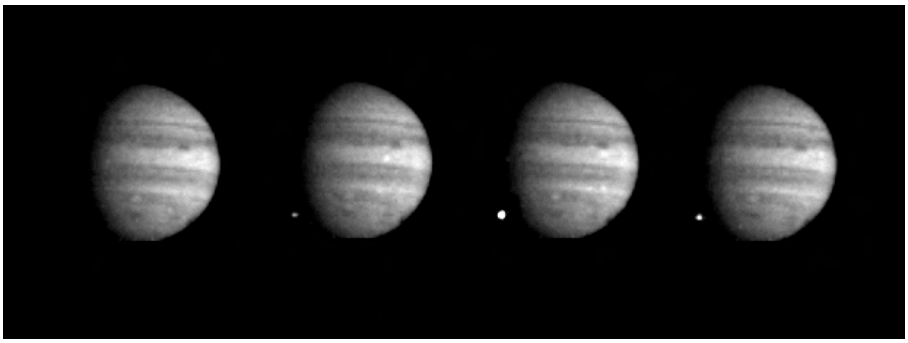
Comet Shoemaker-Levy discovery films March 23 1993

Sixty-six million years ago, the Cretaceous period of Earth's geologic history ended rather abruptly with the mass extinction of about three quarters of all the species of life on Earth. The theory proposed by Luis Alvarez and his son Walter was based on the large amount of iridium that was found at exposed rock sites all over the world. The discovery in the early 1990s of the 200-mile wide impact crater whose centre was near the coastal town of Chicxulub Pueblo, in present-day Mexico, began a long stretch of evidence that leads most scientists to conclude that the impact of an asteroid (or less likely a comet) had a lot to do with the Cretaceous-Paleogene mass extinction.

More recently, some evidence has emerged that the impact in the Gulf of Mexico was not the only one that occurred at that time. The 15-mile wide Boltysh crater in Ukraine, and the 12-mile wide Silverpit crater in the North Sea, not far from Great Britain, might have been formed at about the same time. These structures, and others that have been found or speculated, are all between North latitudes 20 and 70 degrees.

Could these structures be impact craters, and if they are, could they have formed in connection with the Cretaceous–Paleogene extinction? This suggests the possibility of near-simultaneous multiple impacts.

But the operative word has to be “suggests”. The evidence is there, but it is speculative and not strong, that the Chicxulub impactor might have been just one of a series of impacts. According to a paper by Krisopher Dekan of the University of Gothenburg, “To conclude that a mass extinction of this sort is not associated with immense extraterrestrial impact is to break the rules of a respected scientist. There is too much evidence in favour of at least two large impacts and no other factor can explain the (Iridium) anomaly that is globally widespread in both sides of the paleomagnetism of that time, being normal and reversed near the K/Pg boundary.”



Galileo spacecraft image of Fragment W impacting jupiter, July 21, 1994

We will never know what upended the Earth’s biosphere 66 million years ago, because we were not there. But at this juncture I would like, not to ignore the methods of modern science, but to take science out for a walk in the desert. We will never know, but what if a Shoemaker-Levy 9-style multiple impact is what caused the elimination of most of the species of life on Earth?

What if? I think it is fun to speculate on this question. From my own perspective, as I take that fictitious walk in the desert, my decision to begin hunting for comets when I was a teenager in 1965 might have led to a personal communion with a major event on the planet that has given me so much pain, and so much more joy.

By Khoa Tran. *Lynd's Dark Nebula 673 (& Friends)*
Continuing my Obscure Dark Nebula kick, here's LDN 673, in the constellation of Aquila. Like the other dark nebulae I've imaged recently, it's a region of space dust that's so thick it blocks the light of the many, many stars behind it.
A lovely clear night with no moon at the RASC Montréal Centre dark site (Bortle 4) in southern QC.
192 x 60s @ISO1660
***Camera**: Olympus Pen-F Digital*
***Telescope**: Takahashi FS-60CB with 1.04x Multi-Flattener*
***Filter**: Baader Neodymium Moon & Skyglow*
***Mount**: Vixen Advanced Polaris with WL unit*
***Guiding**: Orion Thin OAG with Lacerta MGEN-2*
Stacked and processed in Siril, along with with GraXpert, StarNet V2, and GIMP

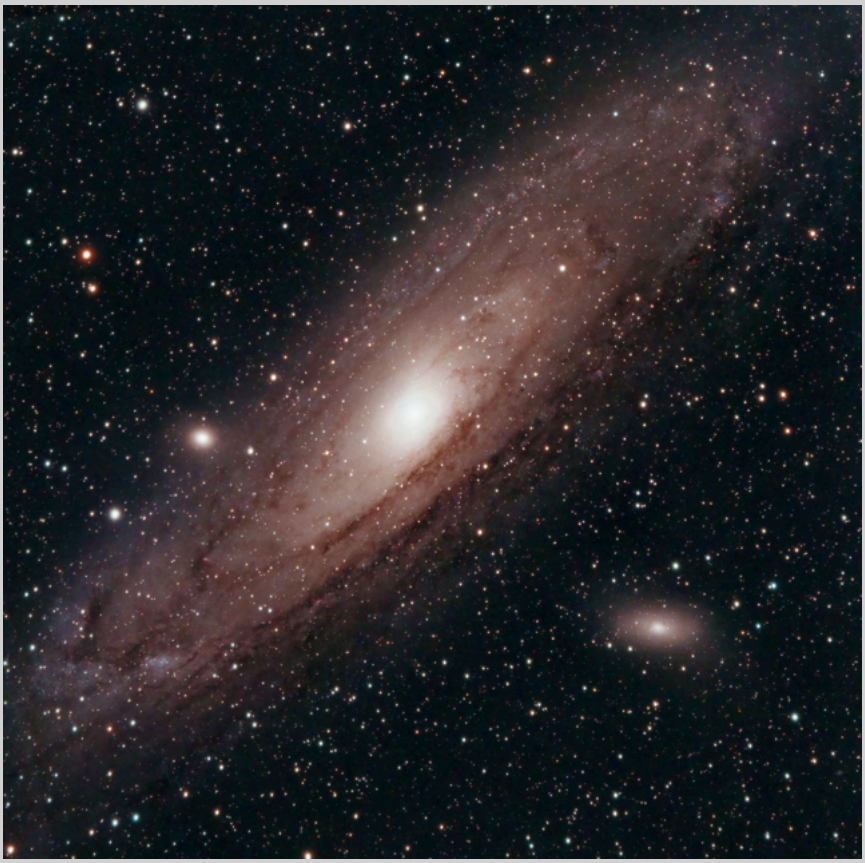
For Sale

SkyWatcher Star Adventurer 2i Pro Pack tracker for sale - 375$

Not getting enough nighttime sorties, so I'm going to put my mount up for sale.

It has been a fabulous grab and go system for me. it just works! This tracker comes complete along with a hard-shell carrying case that I configured. The only exception being ,no tripod.

For more information, please contact me by email at Detlev Schmalhaus cool_dad58@hotmail.com, or Tel: (514)248-0714.



By Detlev Schmalhaus. *Andromeda Galaxy.I photographed M-31 on 5 different nights, spanning from last October 2024 to just recently at Wool Woods. Total integration time of 6,75 hours.*

Tony Schellinck's *Observing with Binoculars. Recent presentation at the Arbo. Photos by Paul Simard*

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