Prescott Astronomy Club

Ephemeris

The Official Newsletter of the Prescott Astronomy Club (PAC)
e-phem-er-is: a time-based listing of future positions of solar system objects.

Original Photo: Lucas Pezeta

Greetings PAC Members,

The Prescott Astronomy Club had a very successful year in 2022, returning to our past level of participation before the pandemic. We held 12 star parties with 2 more scheduled but cancelled due to poor weather. Thanks to all those involved. We held a large event at the Prescott Valley Civic Center co-sponsored with the Prescott Valley Public Library. Over 150 people attended. The club had another great picnic though weather cut it a little short. More events and more collaborations are planned for next year.

To get 2023 off to a good start, I encourage you to renew your membership before the end of this month. The active list will be updated Jan. 31, 2023. Dues are the same as last year: Individual $25 and Family $35. You can renew your membership and pay your dues online at the PrescottAstronomyClub.org website or you can send a check to:

Prescott Astronomy Club
186 E Sheldon St. #1122
Prescott AZ 86301

You can also pay in person at the January meeting. Please re-fill out the membership form so we can keep up with any new information. If no changes, just mark the form with your name and "no changes."

We are planning events with ERAU, regular meetings at the Prescott Public Library, and a field trip to Lowell. Come be a part of it.

Please contact any of these board members to ask questions and make suggestions.

Have a Happy New Year!

Art Arnold-Roksandich
PAC President

Meeting – February 1, 2023

6-8pm Prescott Public Library
Speaker: Dr. Windhorst

Dr. Windhorst will provide a follow up to his March 2, 2022, presentation on the JWST mission. In March he covered the preparation, the coordination efforts, and the launch, including expectations of the James Webb Space Telescope. This time he will cover the trip and results of the mission and what we can expect in the future.

Dr. Rogier Windhorst is Regents' and Foundation Professor at Arizona State University and Interdisciplinary Scientist for the James Webb Space Telescope (JWST). Since 1987, he helped build up a world class group of astrophysicists and the ASU Cosmology Initiative, consisting of 16 faculty and numerous postdocs and students in the ASU School of Earth and Space Exploration.

Since 2002, Windhorst has been Interdisciplinary Scientist for JWST, with which he plans to make detailed a study of the epoch of First Light, when the universe was much less than one billion years old. He hopes to observe the First Stars directly during the first 500 Myr via so-called "cluster caustic transits", where gravitational lensing from foreground galaxy clusters can temporarily produce extreme magnifications of these

individual early stars that happen be in exactly the right location behind the cluster. His JWST GTO team also plans to monitor the best survey field at the North Ecliptic Pole (NEP) to find the earliest supernovae with JWST in the first billion years, faint variable brown dwarf stars in our Galaxy, faint variable Active Galactic Nuclei, and to study the host galaxies of the first quasars seen less than one billion years after the Big Bang.

UPCOMING SPEAKERS

Mar: Dr. Moskovitz, Lowell - Earth strikes back: NASA's first planetary defense experiment crash analysis
Apr: Dr. Richardson and students - ERAU's recent SOFIA flight
May: Ernest Cisneros - Mastcam-Z/Perseverance rover MSL mission

PAC Holiday Party 2022

Art Arnold-Roksandich, PAC President

Prescott Astronomy Club ended its year with an elegant Holiday Dinner Party at the Hassayampa Hotel on December 7, 2022. 28 members & spouses attended a festive & convivial affair. Conversations flowed easily, as we greeted old friends & began making new ones. The cocktail hour gave way to a delicious meal, dessert, door prizes, and presentations. Talking with club members reminded me of the accomplishments that PAC has made in 2022:

We put on 12 Star Parties, the largest was co-sponsored by the Prescott Valley Public Library with over 150 attending. We had a member only star party at Dave Covey's property. Something we hope to continue in 2023. For 2023, PAC is positioned to grow its community outreach & move forward with ideas and opportunities made possible by the willingness & dedication of volunteers. Thanks to all that helped make 2022 such a great year.

The highlight of the evening was Marilyn Unruh's speech honoring David Viscio, the Ephemeris editor, who is stepping down after 12 years. Marilyn's talk outlined David's many contributions to the club: President, Vice President, Editor, Starry Nights coordinator. David has amazed us with his astrophotography. One of my favorites is his time-lapse study of Europa transiting Jupiter where Europa's shadow was clearly visible on Jupiter's surface.

Marilyn's research uncovered some of David's earthly accomplishments. David holds a doctorate in Chemistry & worked at Colgate-Palmolive for many years. He holds many US patents. During his R&D tenure, Dr. Viscio gained world recognition as one of the inventors & patent holders for tooth whitening strips. The club presented him with a planisphere watch as token of our appreciation. Our club is full of talented people.

Special thanks to Susanne Vaughn for organizing our party & making the evening a success. Susanne provided all the leg work, menu planning & administrative details. She was also able to gather donations for several door prizes all with an astronomical twist from galaxy key rings to lunar travel planners to solar eclipse shades. Everyone went home with a bag of planetary goodies.

As a side note, an unusual astronomical event was occurring during dinner. The Moon-Mars conjunction. Arriving at dinner @ 6pm, several of us observed that Mars was east of the moon by about half a degree closer to the horizon. As we were leaving, Mars was now west of the Moon by about half a degree. A very visible difference that the celestial bodies are not as fixed as they seem.

Thanks to everyone who attended, hope you had a laugh & enjoyed a great meal. For those that missed, plan to be with us next year. May your New Year be safe, productive, clear & bright. Happy New Year!

Original Photo: Zukiman Mohamad

Milky Way with Meteor:
This picture was taken at the Members-Only Star Party at Dave Covey's house in north Prescott Valley on Friday, October 28, 2022. The image was acquired with an astrophotography app on the Google Pixel 7 Pro smartphone & was processed in Pixinsight & Photoshop.

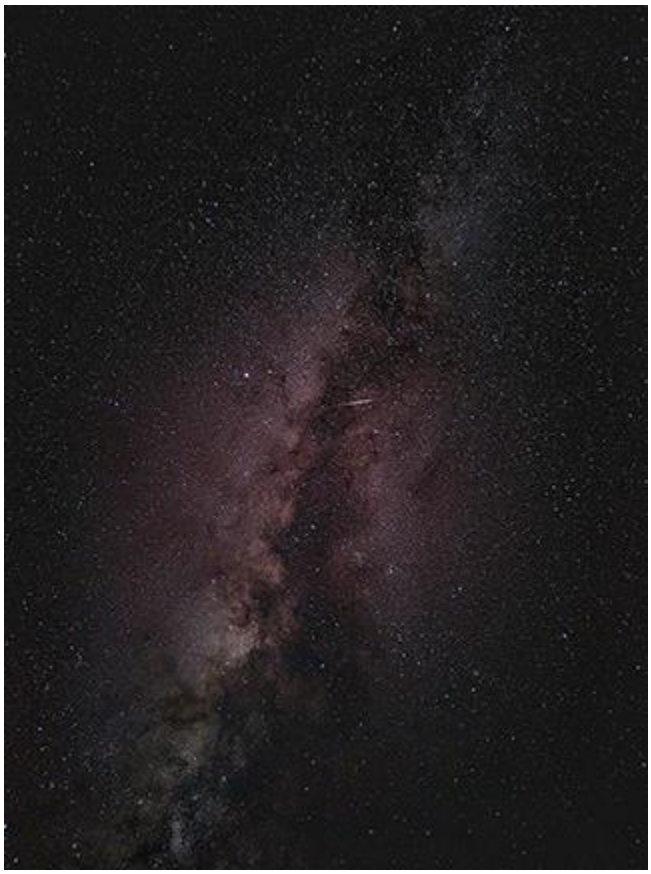


Photo Credit: Brian Blau

Original Photo: Camille Cox

January 2023:

This calendar is put together from several sources & shows the objects & events visible during January 2023.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1 Conjunction of Venus & Pluto Close Approach of Moon & Uranus Lunar Occultation of Uranus	2 Mercury at Perihelion M41 is Well Placed	3 Conjunction of Venus & Pluto Close Approach of Moon & Uranus Lunar Occultation of Uranus Quadrantids Meteor Shower	4 The Earth Perihelion Quadrantids Meteor Shower	5	6 Moon at Aphelion	7 Mercury at Inferior Solar Conjunction Mercury at Greatest Eastern Elongation
8 Moon at Apogee	9	10	11	12 C/2022 E3 (ZTF) at Perihelion Mars ends Retrograde Motion	13	14
15 M47 Is Well Placed NGC 2403 is Well Placed	16	17 NGC 2451 is Well Placed	18 134340 Pluto at Solar Conjunction	19 Y-Ursae Minorid Meteor Shower Conjunction of Moon & Mercury	20 NGC 2516 is Well Placed Moon at Perihelion	21 Moon at Perigee Jupiter at Perihelion
22 Conjunction Venus & Saturn Close Approach Venus & Saturn Uranus Ends Retrograde Motion Conjunction of Moon & Saturn	23 Conjunction of Mon & Mercury at Highest Altitude in Morning Sky NCG 2547 is Well Placed	24 Mercury at Dichotomy	25 Conjunction of Moon & Jupiter Close Approach of Moon & Jupiter	26 Asteroid 6 Hebe at Opposition	27	28 Close Approach of Moon & Uranus Lunar Occultation of Uranus
29	30 Mercury at Greatest Elongation West Conjunction of Moon & Mars Close Approach of Moon & Mars Lunar Occultation of Mars	31 96P/Machholz at Perigee 96P//Machholz at Perihelion M44 is Well Placed IC23191 is Well Placed IC2395 is Well Placed				

Original Photo: Unknown

Our club webmaster, E. J. Van Horne, shares tips on how to get the most out of our website.

When we astronomers look into the sky, our telescopes are time machines. If the star is a thousand light years away, we go back in time 1,000 years because the light we see left the star that long ago. Our sun is 8 light minutes away, so even for it our information is from minutes ago.

Our club website has its own time machine or actually time machines.

Under the News item on the main menu, we have archives of the Ephemeris Newsletter and the General Meeting Minutes. The Ephemeris contains club news, upcoming events, and articles of use to both beginning and expert astronomers. The Minutes tells you what was discussed at the meeting and who the speaker was.

My favorite time machines on the site, though, are the archives of talks. You can find this under Resources > Talks. The Third Thursday Talks were dedicated entirely to talks from experts, usually from local universities and observatories. You can explore these through the link. Since July, 2022, we include these talks in the Club Meeting Talks, which now include the experts.

One of my favorite talks is about how Pluto was demoted to a dwarf planet in 2006. In this one, Dr. Gerard van Belle of Lowell Observatory describes how it happened. He is not a fan of the process or the result and proves that under the new rules only Mercury and Saturn qualify as planets! Click on 13 on the navigation bar of the Third Thursday Talks to jump to it. I include a link to a YouTube video of the talk in the entry.

I hope that the site helps you enjoy your exploration of the sky even more.

E. J.

Original Photo: Egil Sjøholt

We'd Love Your Photos & Ideas for the Newsletter!

I am requesting any & all photographer members of PAC to submit astronomical &/or sky photographs to share with all the members by their inclusion in Ephemeris. Images can be sent to Hilary Legacy at ed@prescottastronomyclub.org. Please include descriptions of equipment, cameras, image capture parameters & processing, as well as what's in the image & when & where you took it. Or, for anyone who likes to photo edit or make their own images, I'd love to hear from you too. Thanks!

I'm also asking for anyone with ideas of things we could put in our newsletter to contact me. If there's something you'd like to see here, then tell me about it. Email Hilary Legacy at ed@prescottastronomyclub.org.

Original Photo: Joonas Kääriäinen

Observing lists are available in PDF format on the PAC website to provide guidance & goals for visual & astrophotography programs. This list These lists graciously provided by Past President David Viscio to assist in planning your observation activities. The lists are in PDF format and may be viewed, downloaded or printed with the permission of David Viscio.

Astroleague Lunar 100
Bright Nebulae Dunlop 100.
Globular Clusters
Messier
Planet Maps
Royal Astronomical Society of Canada Finest
NGC Saguaro Astronomy Club Best NGC S&T
Binocular Showpieces Caldwell
Face-On Spiral Galaxies
Herschel II
Herschel 400

SCAVENGER HUNTS IN THE SKY

Lists for Any Occasion

Need ideas for your visual or astrophotography program? We have you covered with observing lists for your personal exploration or use at a star party.

Click on the links below to open an observation list in another window to view or print it.

Astroleague Lunar 100
Astroleague Urban
Binocular Showpieces
Bright Nebulae
Caldwell Objects
Double Stars
Dunlop 100 (Southern Hemisphere)
Face-On Spiral Galaxies
Globular Clusters
Herschel 400
Herschel II
Hidden Treasures
Messier Objects
Open Clusters
Planet Maps
Planetary Nebulae
RAS of Canada Finest NGC
Saguaro Astronomy Club Best NGC
Secret Deep
Space & Telescope Lunar 100
Telescope Showpieces by Month

Original Photo: Rajesh S. Balouria

What You Need to Know About Astronomy Apps

By Hilary Legacy

There are many astronomy apps available on both the Apple & Android platforms, but not all are created equal. Each offers different functions & information, each with a different design & style. Some focus on constellations & stars, others on the moon, yet others on education. I'll review one app per issue, & any members using astronomy or other related apps who are willing to submit reviews or information on that app, I'd be grateful if you'd submit them to Hilary Legacy at ed@prescottastronomyclub.org.

Star Walk 2

This is a great app, both for stars & constellations & for educational articles. To see the major stars & constellations in either the Northern or Southern Hemispheres, hold your phone up to the sky for the north or down to the ground for the south. It displays the shape of the constellations & their names. You can even take a photograph of the sky & the app will identify the stars &/or constellations(s) in the photo. Then there's a set of four bars with a dot on the right of each one in the bottom right corner of the screen, which gets you to the main menu (there is also a button with which to take photographs, as mentioned before, a button to upload your photos or save them, & a button to do a search or ask a question. When you select the main menu button, you'll have many options (of which I will highlight only a few): Stargazing News is the selection for their educational articles, which I've found to be good if for a less astronomically-savvy audience; Astronomy Calendar gives you events & other information organized by date; Visible Tonight give you information on the moon, our solar system's planets & few other stars & constellations; Space Quizzes has fun (but pretty easy) little quizzes on all things space; Space Cartoons gives you little funny memes & videos that on the subject of space. They also have "sister" apps: Ephemeris (only available if you pay for the app) lists the positions of the planets, moon & other bodies in the sky; Space Museum lets you observe 3D models of spacecraft from many angles, & learn about what mission they were used for, launce time & date & then to see its position in the solar system; Moon Walk, which is an augmented reality app that allows you to join he Apollo 11 mission as if you were there, & more. This is my favorite general astronomy app & my favorite educational one!

Next Issues: Sky Tonight app.

Original Photo: Samer Daboul

These are photographs from non-PAC members that you might enjoy.

Photo Credit: Chait Goli

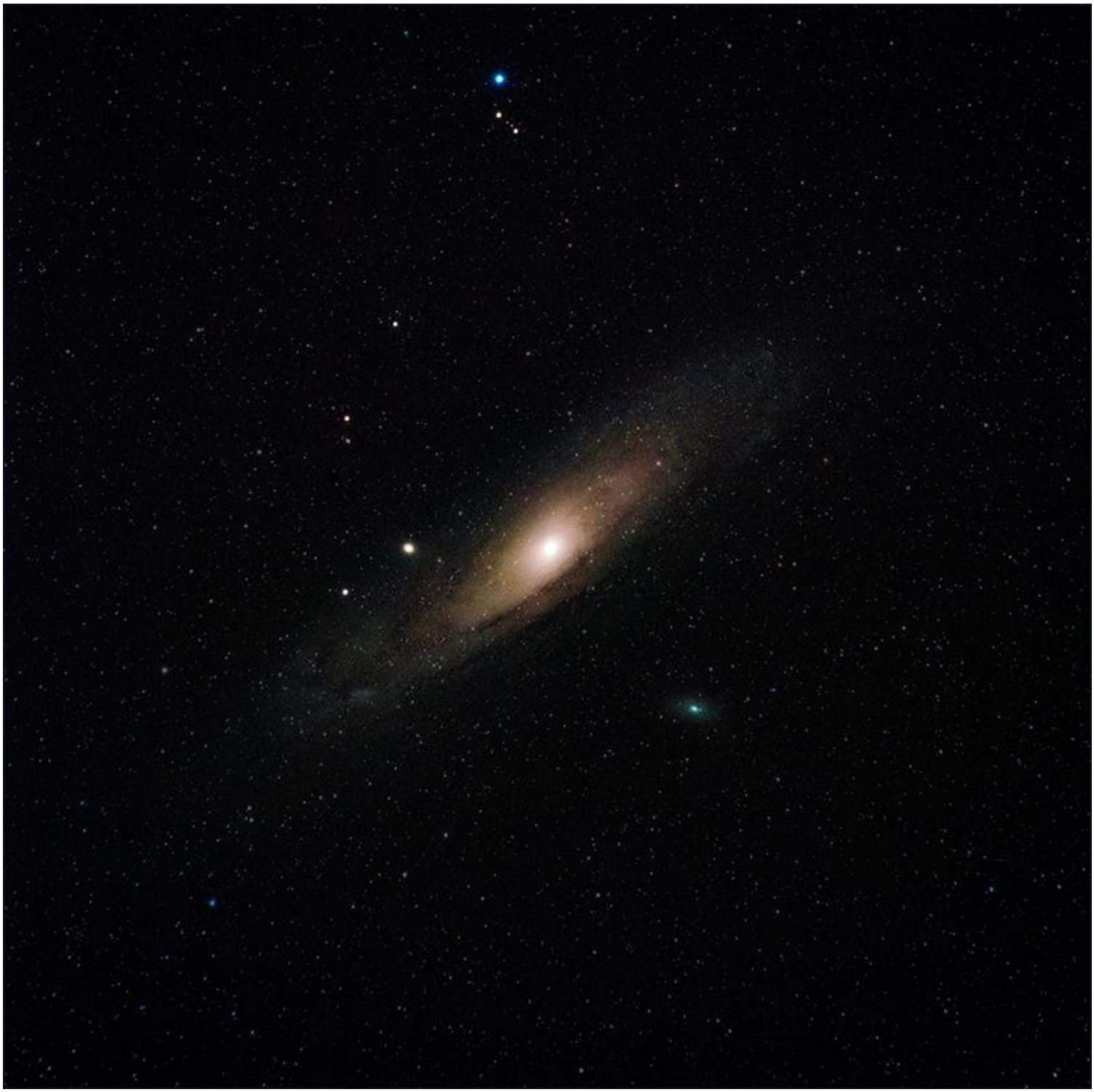


Photo Credit: Alex Andrews

Original Photo: Tobias Bjørkli

PAC Board of Directors:

President: Art Arnold-Roksandich
Vice-President: Brian Blau
Secretary: Jack Evans
Treasurer: Roland Albers

PAC Directors-at-Large:

Ken Olson
Doug Tilley
EJ Van Horne
Susanne Vaughn

PAC Coordinators:

Astronomical League Coordinator: Ken Olson
Club Equipment: Open
Facebook: Open
Membership: Roland Albers
METASIG: John Dwan
Newsletter: Hilary Legacy
Night Sky Network: Open
Outreach & Star Parties: Brian Blau
PAC Affiliate Partner, NAU Space Grant Program: Cory Shaw
Refreshments: Open
Schools & Camps Outreach: Joel Cohen
Starry Nights Coordinator: Brian Blau
Webmaster: EJ Van Horne

Here are job descriptions of the open positions:

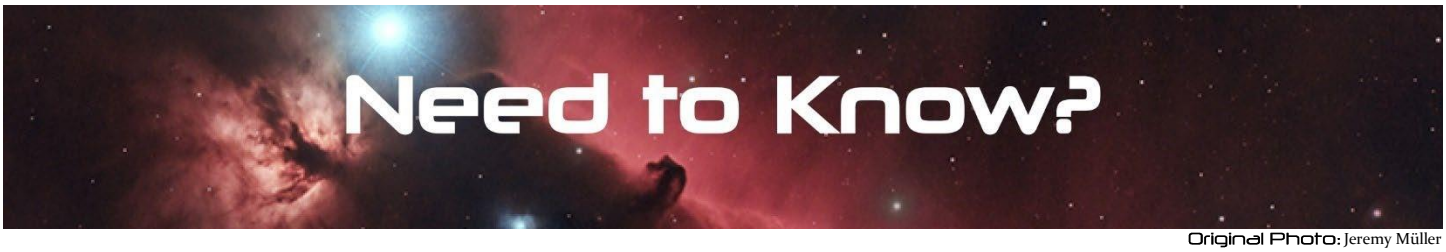
PAC Contact Information:

Website: http://www.prescottastronomyclub.org
Email:
pacinfo@prescottastronomyclub.org

PAC Mentors:

If you need advice on the purchase of astronomy equipment, setting up equipment, astrophotography, etc., contact a PAC mentor.

Astrophotography: Open
General & Astrophotography: David Viscio
Visual Observation: Greg Lutes



Original Photo: Jeremy Müller

Ask a Member!

A 15-minute segment is being added to the regular general meetings where members can have their burning questions answered by other knowledgeable members. If you have an astronomy-related question you would like answered, submit it to Art Arnold-Roksandich at p@prescottastronomyclub.org. You can also bring up the question at the meeting.

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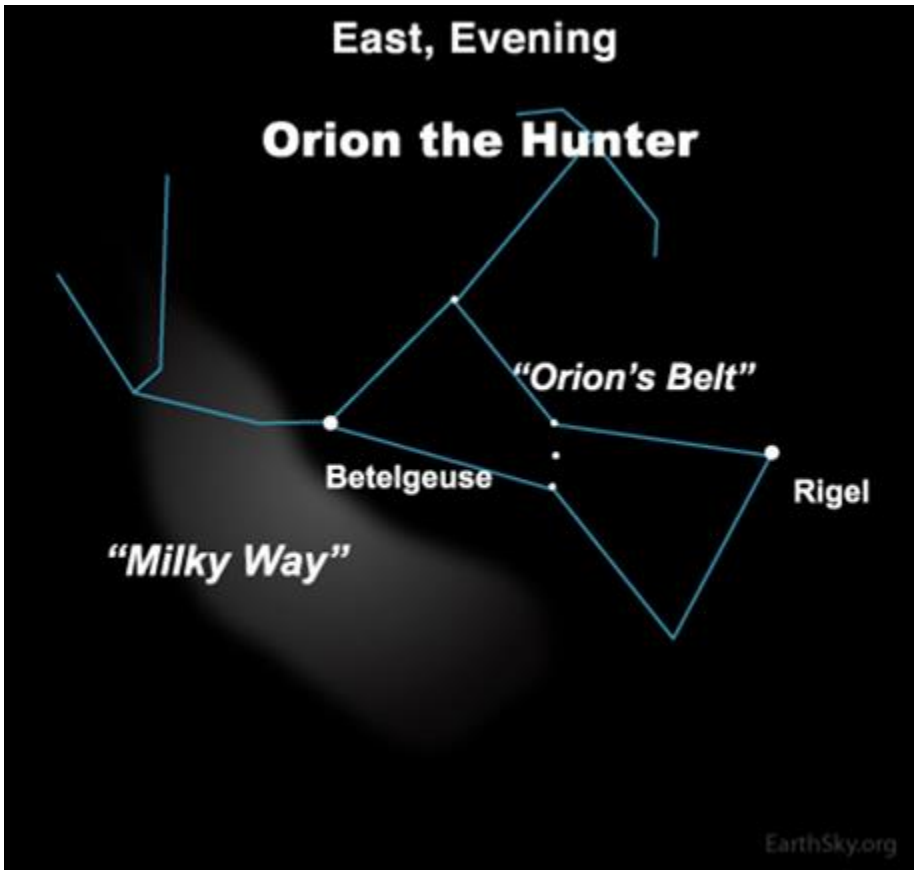
Original Photo: unknown

Orion the Hunter and the Milky Way



On December and January evenings, you'll find a faint band – what we in the Northern Hemisphere call the "winter" Milky Way – stretching up from the horizon and running through the constellation Orion the Hunter. Notice Orion's 3 Belt stars. They're easy to spot in the sky. But you'll need a dark sky to see the Milky Way.

Tonight – or any December evening – find the famous constellation Orion the Hunter. It's bright and can be seen from inside smaller cities. And the three stars that make up Orion's Belt – in a short, straight row at the Hunter's midsection – are very noticeable. If you have a dark sky, you can see something else: the starry band of the Milky Way – the edgewise view of our home galaxy – running behind Orion.

As seen from the Northern Hemisphere, after Orion rises, the three stars of Orion's Belt jut more or less straight up from the horizon. Look on either side of the Belt stars for two very bright stars. One is the reddish star Betelgeuse. The other is bright, blue-white Rigel.

Throughout December, the constellation Orion is well up by mid-evening (by that we mean by midway between your local sunset and your local midnight). Like all of the starry sky, as Earth moves around the sun, Orion rises earlier each evening. And, by late December, Orion will be seen at nightfall or early evening. That's true for both the Southern and Northern Hemispheres.

Orion is a summer constellation for the Southern Hemisphere.