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PAStimes

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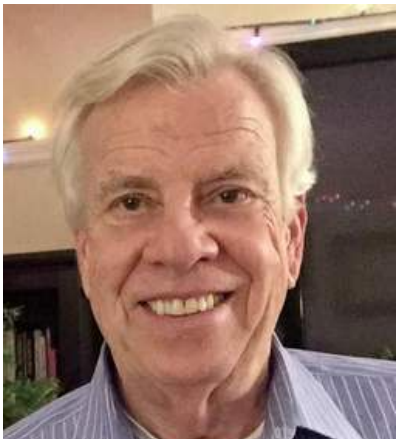
Stu's Views

- Stu Brackney, President PAS



Hi everyone. As you can see from this issue of your PAStimes, there is a lot going on with PAS.

We still have two ten-inch (10") Dobsonian telescopes for sale priced well below current market listings for you members. Both are in excellent condition and ready to use as they come with two eye pieces. The Dobsonian telescope is perfect for beginners in our hobby. Interested? Contact telescope@pasaz.org. As a reminder the funds raised will go towards our Sam Insana PAS Student Scholarships.

Because of the rapid sale of our inventory, I am proud to announce that the PAS Board of Directors has approved two $1,000 scholarships this year! One more reason for you to be a proud member of PAS.

Our monthly lecture series has taken a new direction. In the past we have tried to have our speakers come to PVCC to address our members and simultaneously broadcast the lecture via the internet to you via Zoom or Microsoft Teams. This has proven too complicated due to the various computer changes implemented by the college. Therefore, the following system is being implemented:

On our website, where you can and must register for lectures and other events, we will list either lectures only via Zoom or only in the classroom, not both simultaneously. We apologize for this change but feel it can better accommodate our goal to share these lectures with you. PLEASE carefully read the schedule of events on our website and verify the location.

Speaking of lectures, Thursday Sept 5th we will be having Dr. Steve Levin, Juno Lead Scientist JPL/NASA, giving us an update on the Juno Mission, which is designed to measure Jupiter's composition, gravitational field and much more. Sign up by visiting www.pasaz.org.

Finally, I am proud to say our leadership team is now complete! We now have Mr. Chris Ford on board as our Secretary and Ms. Ruza Sabelja as our Event Manager. With this group of volunteer astronomers, I feel we will have an exciting year ahead of us as we learn more about our cosmos.

Clear skies all and see some of you at our next event.
Stu

In This Issue

September Upcoming Events

September 2024 brings our normal schedule of events.

5th – Monthly Lecture Series- ”Juno Mission Update”- Zoom
14th- International Observe the Moon Night- Apache Wash Trailhead Park
19th- Telescope Workshop-PVCC Main Campus

For more information and to register for these events, go to the PAS Event Calendar and Registration Site
It is important to register for all events. In case of an event change or cancellation, you will be notified via email.

June, July, August Lecture Series-Cancelled

September Lecture Series

Speaker: Dr. Steve Levin
Topic: Juno Mission Update

Dr. Steve Levin has worked at the Jet Propulsion Laboratory since 1990. During that time, his research interests have included the Cosmic Microwave Background, the search for extraterrestrial intelligence (SETI), measuring magnetic fields in star-forming regions, looking for near-Earth asteroids, modeling radio emission from Jupiter’s radiation belts, and microwave observations of Jupiter. He has done radio astronomy from large radio telescopes, mountain top research stations, the South Pole, high-altitude balloons, and spacecraft. He is currently the Project Scientist for Juno, Lead Co-I for the Juno Microwave Radiometer, and Lead Scientist for the Goldstone Apple Valley Radio Telescope project (GAVRT).

Research and Expertise

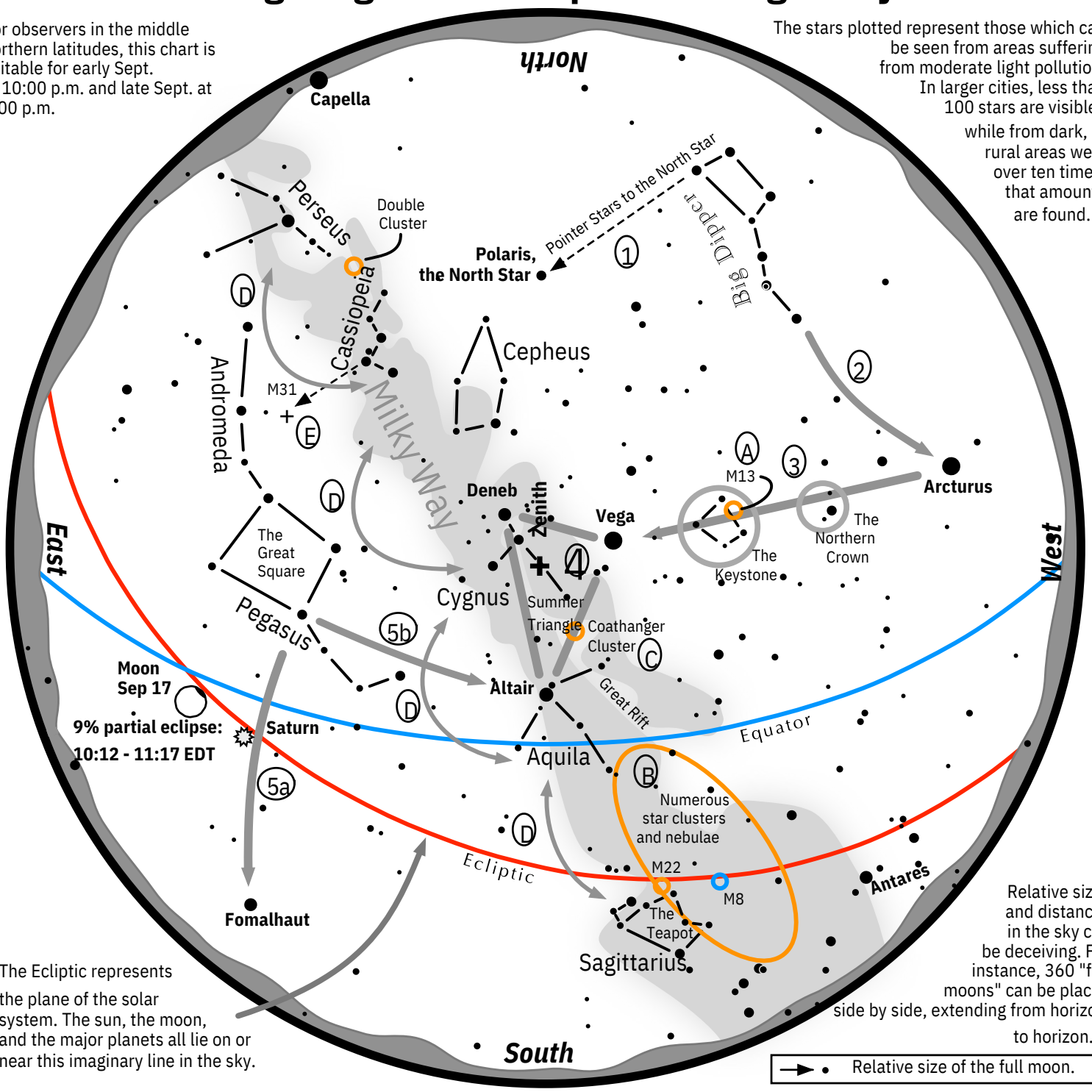
Dr. Levin's research interests are diverse and include:
Cosmic Microwave Background
Search for extraterrestrial intelligence (SETI)
Measuring magnetic fields in star-forming regions
Near-Earth asteroid detection
Modeling radio emission from Jupiter's radiation belts
Microwave observations of Jupiter

Throughout his career, he has conducted radio astronomy using various platforms, including large radio telescopes, mountain-top research stations, the South Pole, high-altitude balloons, and spacecraft

Navigating the mid September Night Sky

For observers in the middle northern latitudes, this chart is suitable for early Sept. at 10:00 p.m. and late Sept. at 9:00 p.m.

The stars plotted represent those which can be seen from areas suffering from moderate light pollution. In larger cities, less than 100 stars are visible, while from dark, rural areas well over ten times that amount are found.



The Ecliptic represents the plane of the solar system. The sun, the moon, and the major planets all lie on or near this imaginary line in the sky.

Relative sizes and distances in the sky can be deceiving. For instance, 360 "full moons" can be placed side by side, extending from horizon to horizon.

Relative size of the full moon.

Navigating the mid September night sky: Simply start with what you know or with what you can easily find.

1. Extend a line north from the two stars at the tip of the Big Dipper's bowl. It passes by Polaris, the North Star.
2. Follow the arc of the Dipper's handle. It intersects Arcturus, the brightest star in the September evening sky.
3. Nearly overhead shines a star of similar brightness as Arcturus, Vega. Draw a line from Arcturus to Vega. It first meets "The Northern Crown," then the "Keystone of Hercules." A dark sky is needed to see these two dim stellar configurations.
4. The stars of the summer triangle, Vega, Altair, and Deneb, shine overhead.
5. The westernmost two stars of the Great Square, which lies high in the east, point south to Fomalhaut. The southernmost two stars point west to Altair.

Binocular Highlights

A: On the western side of the Keystone glows the Great Hercules Cluster.
B: Between the bright stars Antares and Altair, hides an area containing many star clusters and nebulae.
C: 40% of the way between Altair and Vega, twinkles the "Coathanger," a group of stars outlining a coathanger.
D: Sweep along the Milky Way for an astounding number of faint glows and dark bays, including the Great Rift.
E: The three westernmost stars of Cassiopeia's "W" point south to M31, the Andromeda Galaxy, a "fuzzy" oval.

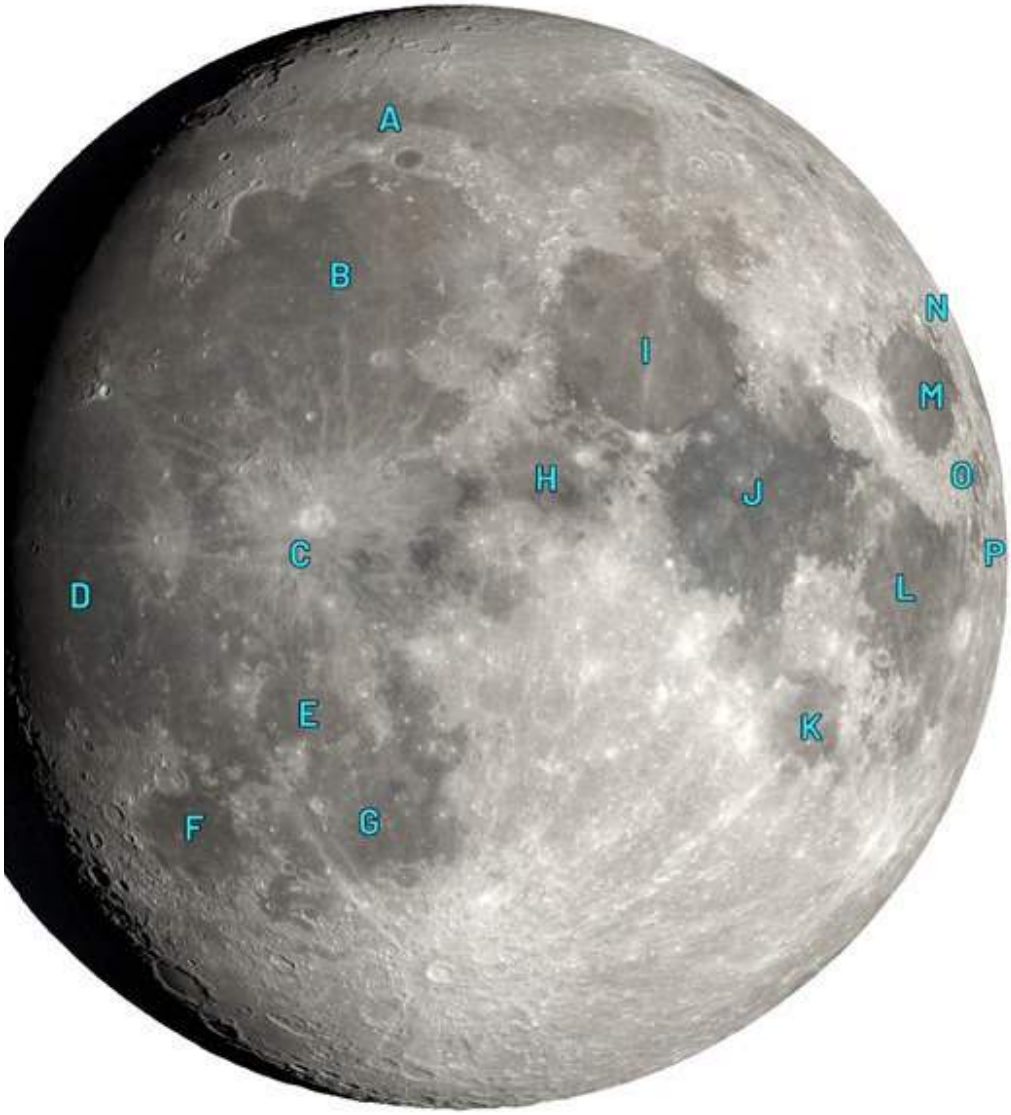
LUNAR MARIA (SEAS) • NORTHERN HEMISPHERE • SATURDAY, SEPTEMBER 14

Moon Map

This map depicts the Moon as it will appear from the northern hemisphere on International Observe the Moon Night, September 14, 2024, at 8:00 PM EDT and 5:00 PM PDT (00:00 UTC September 15).

Lunar Maria (Seas)

Once thought to be seas of water, these are actually large, flat plains of solidified basaltic lava. They can be viewed in binoculars or even with the unaided eye. Some of the maria are circular, hinting at origins from giant asteroid impacts that created great basins, which were later flooded with lava. Other maria are irregular and have more mysterious origins. Tonight you may be able to identify 16 maria on the near side of the Moon.

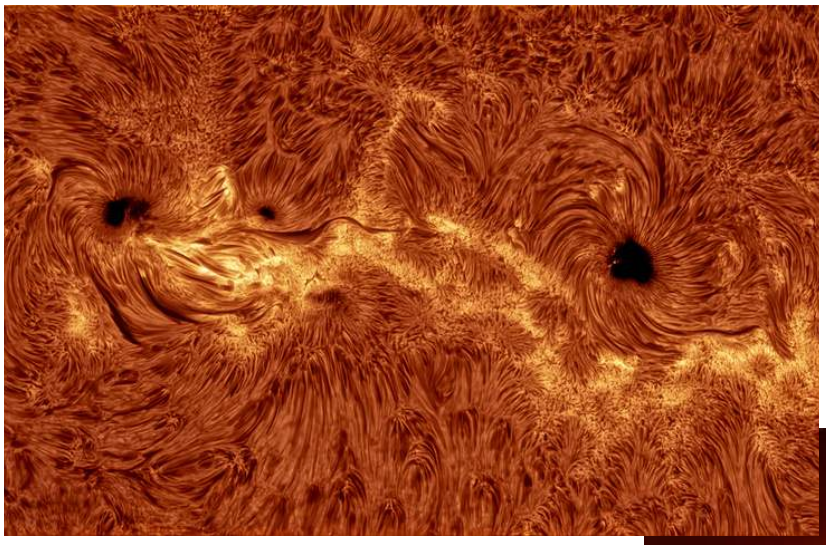


A Mare Frigoris (Sea of Cold)
B Mare Imbrium (Sea of Rains)
C Mare Insularum (Sea of Isles)
D Oceanus Procellarum (Sea of Storms)
E Mare Cognitum (Known Sea)
F Mare Humorum (Sea of Moisture)
G Mare Nubium (Sea of Clouds)
H Mare Vaporum (Sea of Vapors)
I Mare Serenitatis (Sea of Serenity)
J Mare Tranquillitatis (Sea of Tranquility)
K Mare Nectaris (Sea of Nectar)
L Mare Fecunditatis (Sea of Fertility)
M Mare Crisium (Sea of Crises)
N Mare Anguis (Serpent Sea)
O Mare Undarum (Sea of Waves)
P Mare Spumans (Sea of Foam)

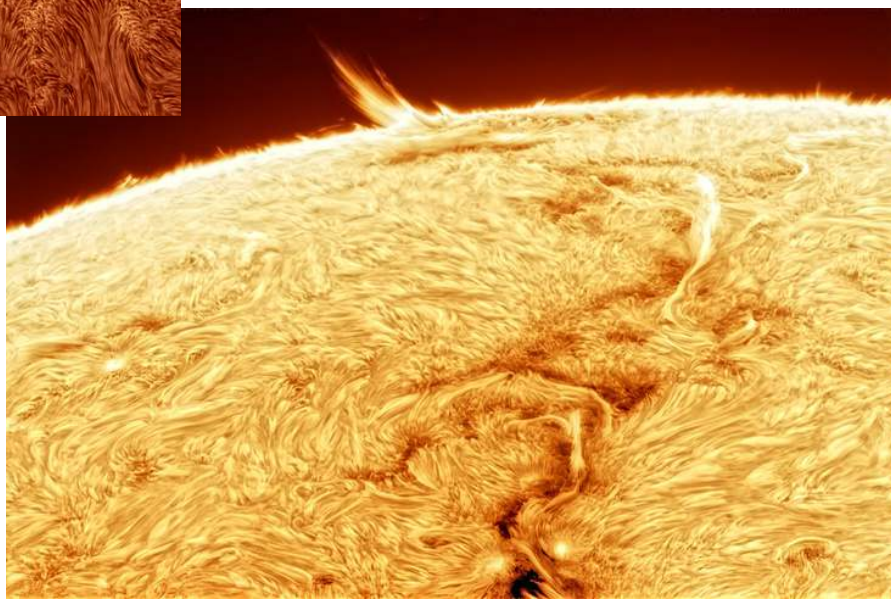
This map is designed for use on September 14, 2024, but can be used on nearby dates or anytime the Moon is at or near the same phase.

Map generated with NASA's Dial-A-Moon (https://svs.gsfc.nasa.gov/5187)

Member Astro Images



sun-mark johnston



moon, saturn- mark johnston

Apps for Astonomy

There are several excellent apps for astronomy, whether you're a casual stargazer or a serious amateur astronomer. Here are some of the top apps you might find useful:

1. Stellarium
   - Platform: iOS, Android, Windows, macOS, Linux
   - Features: A powerful planetarium app that provides a detailed, real-time view of the night sky. It includes constellations, planets, stars, and other celestial objects. It also has a simulation mode for observing different dates and times.
2. SkySafari
   - Platform: iOS, Android
   - Features: Offers detailed star charts and a comprehensive database of celestial objects. It includes telescope control features and educational content about various astronomical phenomena.
3. Star Walk 2
   - Platform: iOS, Android
   - Features: A user-friendly app for identifying stars, constellations, and other celestial objects. It includes augmented reality (AR) features to help you find and learn about objects in the night sky.
4. SkyView
   - Platform: iOS, Android
   - Features: Uses AR to overlay constellations and celestial objects on your view of the sky. It’s great for identifying stars and planets as you point your device towards them.
5. Star Tracker
   - Platform: iOS, Android
   - Features: Provides real-time star maps and tracking of celestial objects. It also includes features like star and planet identification and an AR mode for a more interactive experience.
6. Heavens-Above
   - Platform: iOS, Android, Web
   - Features: Focuses on satellites, ISS (International Space Station) tracking, and other space-based phenomena. It provides detailed pass predictions and visibility times for these objects.
7. Sky & Telescope’s SkySafari
   - Platform: iOS, Android
   - Features: Known for its extensive database and powerful telescope control features. It's well-suited for both beginners and advanced users.
8. Astronomy Now
   - Platform: iOS, Android
   - Features: Provides up-to-date information on celestial events, star maps, and observing guides. It's a good app for keeping track of upcoming astronomical events and learning about them.
9. Cosmos: A Spacetime Odyssey
   - Platform: iOS, Android
   - Features: Not strictly an astronomy app but offers a wealth of information and interactive features related to space and cosmology, inspired by the TV series.
10. Star Charts
    - Platform: iOS, Android
    - Features: Provides interactive star maps and a comprehensive catalog of stars and constellations. It’s useful for both educational purposes and practical stargazing.
11. Moon Atlas
    - Platform: iOS, Android
    - Features: Focuses on detailed maps of the Moon's surface. Great for lunar observers and those interested in lunar features and missions.

12 Starry Night
- Platform: iOS, Windows, macOS
- Features: A comprehensive planetarium software with detailed star maps, telescope control, and educational resources. Suitable for both beginners and advanced users.

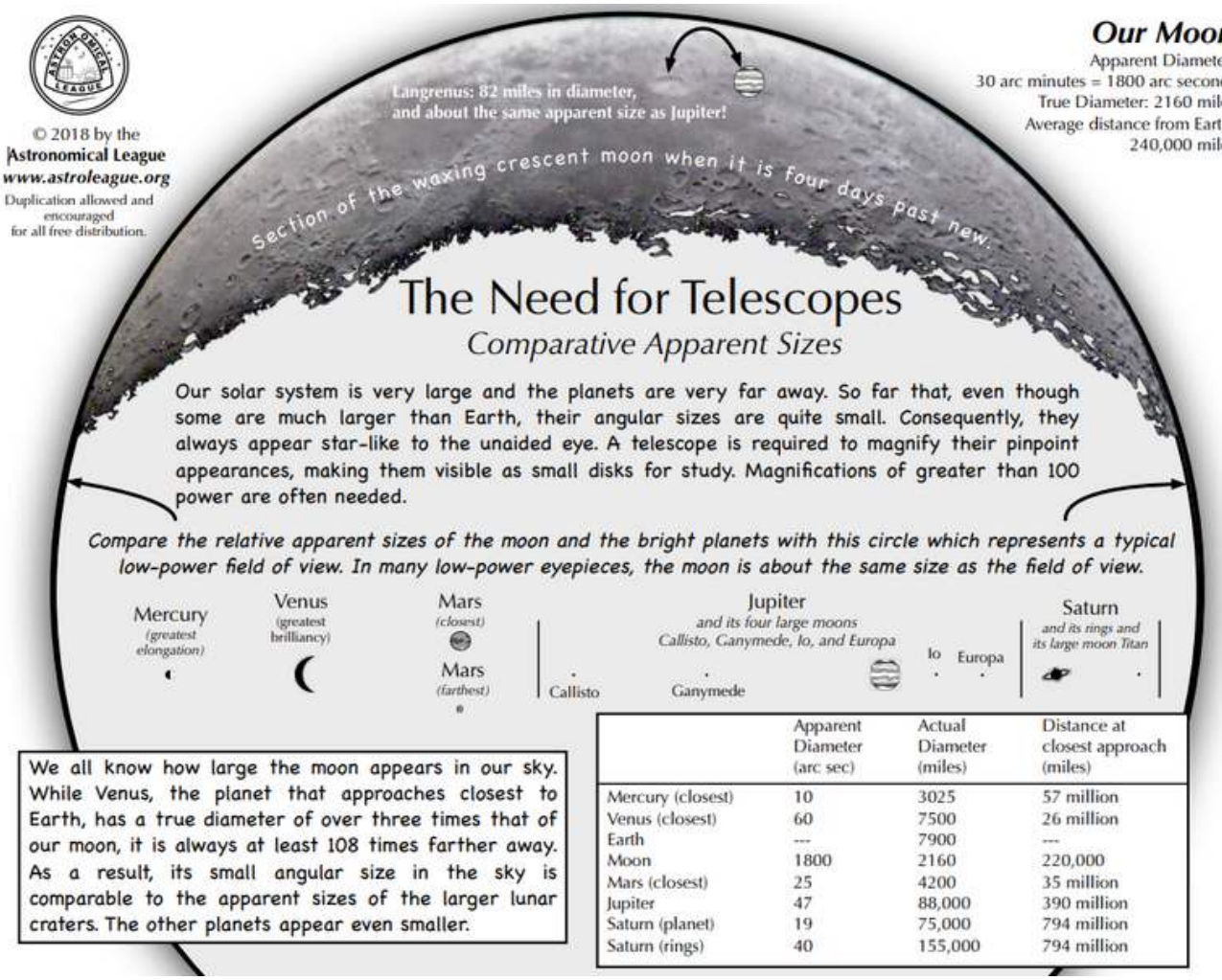
These apps cater to a range of needs, from casual observation to detailed astronomical research. Depending on what you're looking for, you might find one or a combination of these apps suits your stargazing interests. Let us know if you have any other suggestions.

7 Telescope Targets for September

Each month, we feature 7 good targets for small telescopes that should be visible in the evening. For the month of September, the targets are:

1. **M16 Eagle Nebula** Home of the famous “Pillars of Creation” Hubble photo
2. **M11 Wild Duck cluster** Open star cluster in Scutum
3. **Beta Capricorn** A five star system of which two are easily split in small scopes
4. **Cr399 Coathanger cluster** In binoculars or a wide field small scope, looks just like an upside down coat hanger
5. **M56** Globular cluster in Lyra
6. **61 Cygni** Double orange binary in Cygnus. High proper motion made it the first star to have its distance determined by parallax
7. **Albireo** The most beautiful double star in the sky will also become the brightest star in Earth’s sky…in 3.87 million years.

Cosmic Classroom (CC)



	Apparent Diameter (arc sec)	Actual Diameter (miles)	Distance at closest approach (miles)
Mercury (closest)	10	3025	57 million
Venus (closest)	60	7500	26 million
Earth	---	7900	---
Moon	1800	2160	220,000
Mars (closest)	25	4200	35 million
Jupiter	47	88,000	390 million
Saturn (planet)	19	75,000	794 million
Saturn (rings)	40	155,000	794 million

Helpful Astronomy Websites

by Mark Johnston

The following websites are great free resources to help you plan and enjoy your astronomy adventures

Astromart: astromart.com/
This is one of the top two sites for buying and selling used astronomy gear, product reviews, and forums where you can discuss any aspect of astronomy with other enthusiasts. A small fee is required.

Astrometry.net: https://nova.astrometry.net/
This site will take any astronomy image you send it (galaxy, starfield, nebula, etc) and then tell you what it is and where it is in the sky.

Astronomy Tools: astronomy.tools/calculators/field_of_view/
This site has a lot of capabilities but I use it primarily to figure out how a target (e.g. the Helix nebula) will look in my eyepiece or astronomy camera. You pick your scope, camera, eyepiece and target and the site does the rest.

Astrospheric: www.astrospheric.com/
Probably the best short term astronomy weather forecasting tool, providing predictions of clouds, transparency and seeing.

Clear Sky Charts: www.cleardarksky.com/
Excellent source of astronomy seeing conditions forecast. Also a great tool for finding observing sites with lower light pollution.

Cloudynights: www.cloudynights.com/
This is one of the top two sites for buying and selling used astronomy gear, product reviews, and forums where you can discuss any aspect of astronomy with other enthusiasts. Free.

Dark site finder: darksitefinder.com/map/
Great website for finding a dark observing location.

Heavens above: heavens-above.com/
Top site for predicting naked eye observations of satellites. See when the ISS is visible in your neighborhood!

Jupiter transits: shallowsky.com/jupiter/
For anyone with a small telescope, this is a great site. You can find out when the Great Red Spot and Jupiter's satellite transits are visible.

Solar Dynamic Observatory (SDO): https://sdo.gsfc.nasa.gov/data/
Find out how the Sun looks right now, at various wavelengths. If you own a solar telescope, this site coupled with Astrospheric is all you need to plan fabulous solar observing!

Telescopius: telescopius.com/
This site is very helpful in planning an observing evening. It will tell you when any particular target is rising and setting and when is the best time to observe it. This allows you to sequence your observing in a planned manner.

Telescope Items For Sale

This is a first come, first served offer.
Review the list. Decide what you want.
Email stuartbrackney@pasaz.org what you want.
He will set up a day/time for you to come to his location to purchase.
Bring your check payable to Phoenix Astronomical Society or cash … no credit cards please.

Celestron 6” F/4 Newtonian Astrograph Telescope

- Fast 6"-aperture reflector lets you take short exposures with bright, high-resolution results
- Precise 2" dual-speed (10:1) linear-bearing Crayford focuser lies 7" back in the optical tube to block stray light and boost contrast
- Orion-exclusive steel reinforcement plate under focuser eliminates flexure with heavy imaging gear attached
- Compact 22.5" length and light 12.7 lb. assembled weight doesn't require an enormous mount
- Includes two heavy-duty hinged tube rings, 8x50 finder scope, dovetail mounting bar, and more

Member Price: $250 / Non-Member Price: $400

Orion 8” F/4 Newtonian Astrograph Telescope with GoTo Mount and Tripod

- Affordable 8"-class Newtonian telescope optimized for wide-field astrophotography
- The 200mm (7.9") aperture f/4 parabolic primary mirror is made from high-quality BK7 glass with enhanced aluminum coatings to provide >92% reflectivity for bright, vivid images
- Its short focal length and big aperture let you capture more light from deep-sky objects in less time, greatly improving your imaging efficiency
- Compact and lightweight at just 28" long and 16 lbs., can be supported on a mid-sized equatorial mount.
- Includes 8x50 finder scope, hinged tube rings, 12V DC cooling accelerator fan, and a quick-collimation cap. A coma corrector (sold separately) is recommended for optimal flat-field performance.
- GoTo Moumt, controller and tripod are included

Member Price: $450 / Non-member Price: $800

Orion SkyQuest XT10 10” Dobsonian Telescope

- Big 10" (254mm) aperture reflector telescope gathers loads of light for bright views of nebulas, galaxies, star clusters, and close-up study of the Moon and planets
- Stable support provided by the wooden Dobsonian telescope base and CorrecTension adjustment knobs keep the telescope optical tube balanced in any viewing position
- Simple Dobsonian point-and-view ease of use plus IntelliScope smarts equals a reflector telescope for a lifetime
- Includes 2" Crayford focuser, two 1.25" Sirius Plossl telescope eyepieces (25mm and 10mm), a 9x50 right-angle correct-image finder scope, eyepiece rack, collimation cap, and Starry Night software

Member Price: $300 / Non-Member Price: $500

Various Filters – 1.25”

- Red
- Yellow
- Blue
- Green
- Multiple O3 filters

Member Price: $100 / Non-Member Price: $200