

ASTROFILES

Auburn Astronomical Society Newsletter

February 2023

Newsletter Editor — John Wingard — jwin1048@gmail.com

Moon Phases

February 13 — Last Quarter
February 20 — New Moon
February 27 — First Quarter
March 7 — Full Moon
March 14 — Last Quarter
March 21 — New Moon
March 28 — First Quarter
April 6 — Full Moon

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News and events

Even though it is still February, the weather here lately seems more like spring with unseasonably warm temperatures. It has also made for a more comfortable experience outside in the evenings to view the sky, that is if we can dodge the frequent clouds and rain that have also been more numerous. Also, don't forget that we shift back to Daylight Savings Time on Sunday, March 12. This will mean that it will get darker an hour later in the evenings so plan for this if you have any scheduled observing events after that date.

I have received information from AAS member Mike Lewis that we have been approved to utilize the Heaven Hill observing site near Alexander City, AL once again for 2023. This site is provided for *active, paid members of the AAS*. However, there are a number of things that members must know before being allowed to use it. First, it is located on private property managed by the Russell Lands organization. Each AAS member is required to register with Russell Lands **each year** by completing a registration form and signing an indemnity form and mailing it in to their office. You will then be sent a registration card and a 2023 decal to put on your vehicle. For our purposes there is no charge for this as we are considered to be "hikers." Complete information on how to register is found on our website. From the website home page, click on the "astronomy" tab at the top and select "observation site." There you will find the two registration forms, where to send them, and directions to the observing site. The most important thing to note is this... **we have only been approved to access the site one day per month**, primarily around the periods of a new moon. This site is also used for other events and activities so we cannot use it at any other times other than those days that are approved. Any individual AAS member or group must also call the security office at Russell Lands to let them know that someone will be at the site. The officially approved dates for 2023 are as follows:

Saturday, February 18, 2023	Saturday, August 19, 2023
Saturday, March 18, 2023	Saturday, September 16, 2023
Saturday, April 22, 2023	Saturday, October 14, 2023
Saturday, May 20, 2023	Saturday, November 11, 2023
Saturday, June 17, 2023	Saturday, December 9, 2023
Saturday, July 15, 2023	

Recent Images Captured by AAS members



(Left) - An image of the Rosette Nebula by AAS member Chris Young with post processing by AAS member Jay Hall. Also known as Caldwell 49 or NGC 2237, it is located in the constellation of Monoceros at a distance of approximately 5,200 light-years.



(Left) - An image of the Cone Nebula and the Christmas Tree Cluster by AAS member Jay Hall. The official designation is NCG 2264 and it is also located within the constellation of Monoceros at a distance of approximately 2,700 light years. Jay indicated that he has been working on this image for two years and is not finished yet.



(Left) - AAS member Chris Young captured this image of Comet C/2022 E3 on January 20, 2023 as it was nearing its closest approach to the Earth. This is a very long period comet (50,000 years) .



This article is distributed by NASA's Night Sky Network (NSN). The NSN program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.gov to find local clubs, events, and more!

Spot the Morning and Evening Star: Observe Venus

David Prosper

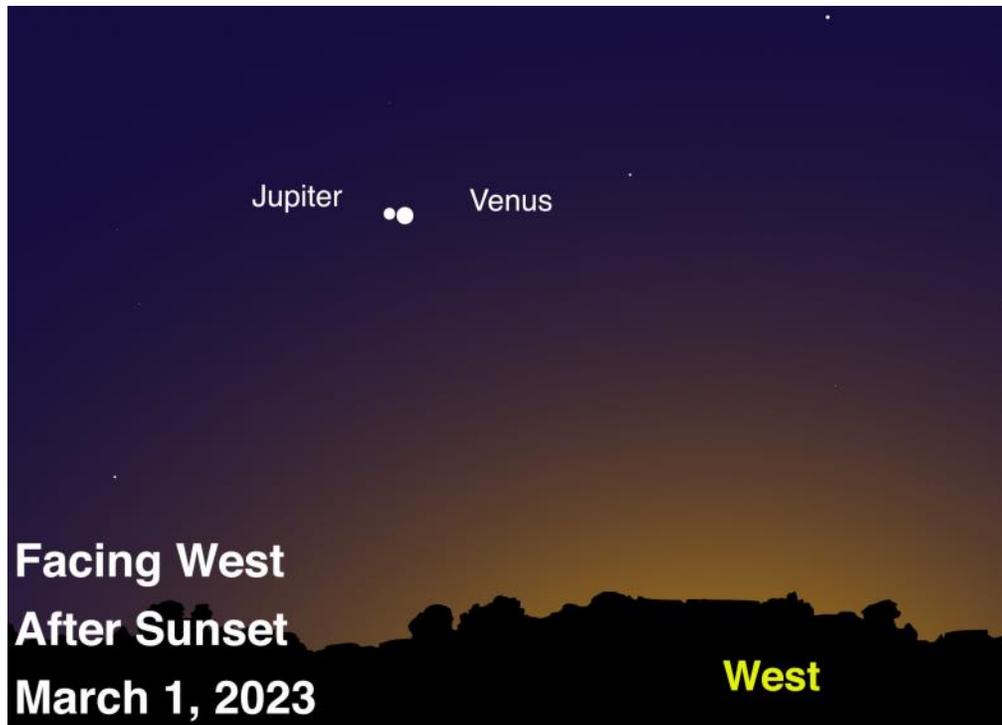
Venus is usually the brightest planet in our skies, and is called “Earth’s Twin” due to its similar size to Earth and its rocky composition. However, Venus is a nightmare version of our planet, featuring a thick, crushing atmosphere of acidic clouds, greenhouse gasses, howling winds, and intense heat at its surface.

This rocky inner world’s orbit brings it closer to Earth than any of the other planets, and is the second closest to the Sun after Mercury. Like Mercury, Venus orbits between our planet and the Sun, so Earth-based observers can observe Venus in the morning before sunrise, or in the evening after sunset – but never high in the sky in the middle of the evening, unlike the outer planets. Since Venus is so striking in its twilight appearances, the planet features heavily in sky mythologies worldwide. Venus’s bright morning and evening appearances are the origin for its dual nicknames: the Morning Star, and the Evening Star. Some ancient astronomers never made the connection, and assumed the Evening Star and Morning Star were two unrelated objects! Observers can even spot Venus during the daytime, if the sky is very clear and the planet is bright enough. Venus also has phases, similar to the Moon and Mercury. Galileo’s observations of Venus’s phases helped turn the astronomy world upside down in the early 1600s, and you can see them yourself using a telescope or even a surprisingly low-power pair of binoculars. **Warning:** Please be very careful when observing Venus with a telescope in the early morning or daytime. Never allow the Sun to enter your instrument’s field of view, as you could be permanently blinded.

Venus’s other moniker of “Earth’s Twin” is a bit misleading. In terms of their surface temperatures and atmospheres, Venus and Earth are extremely different! The surface of Venus is warmer than that of Mercury, despite Mercury being many millions of miles closer to the Sun. While Mercury is still a scorching 800 degrees Fahrenheit (427 degrees Celsius), Venus is even hotter: 900 degrees Fahrenheit (482 degrees Celsius). The vast amount of carbon dioxide in the thick Venusian atmosphere acts as an insulating blanket that retains much of the Sun’s heat, creating the runaway greenhouse effect that dominates its present-day climate. The Venusian surface is a crushing 90 Earth atmospheres on top of its absurd temperatures. These extreme conditions mean that the mission life of any past Venusian robotic landers were measured in **hours** at best – and usually minutes! However, conditions in Venus’s upper atmosphere may be much more hospitable, with temperatures and pressures at 30 miles (50 km) above the surface that are much more Earth-like in temperature and pressure. Studies of the Venusian atmosphere, including seasonal appearances of dark streaks and faint signals of suggestive chemistry, intrigue researchers with the possibility that some sort of life may persist in its clouds. But far more evidence is needed to confirm such a claim, since non-biological factors like volcanism and other processes could also be the source for these signals.

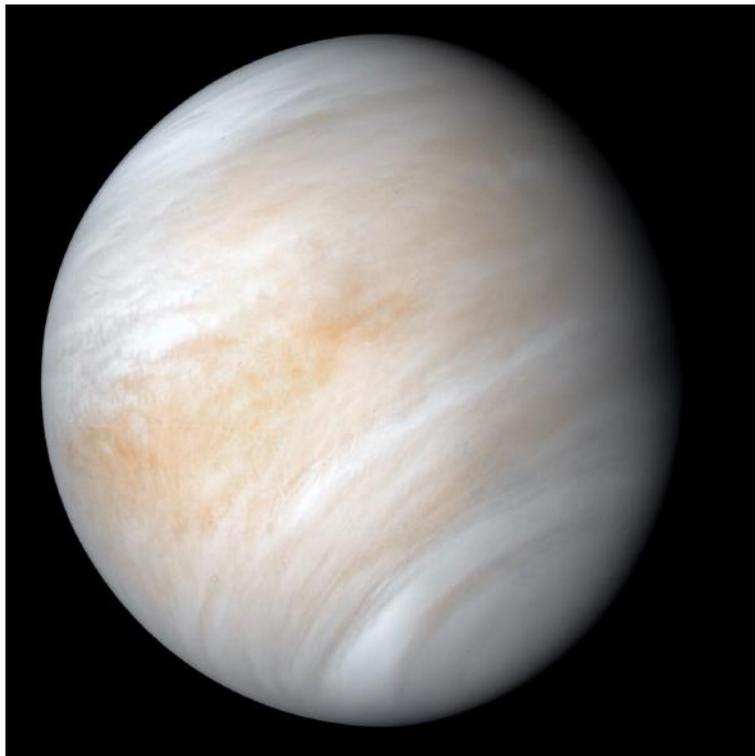
Venus’s thick sulfuric acid clouds block direct visual observations of its surface from optical telescopes on Earth. Multiwavelength observations from space probes show evidence of active volcanoes and possibly some sort of plate tectonics, but follow-up missions will be needed to confirm the presence of active volcanism, plate tectonics, and any possible signs of life. In order to do so, NASA is sending two new missions to Venus by the end of this decade: the orbiter **VERITAS**, which will map the surface in high detail and study the chemistry of its rocks and volcanoes, and **DAVINCI+**, which will study its atmosphere and possible tectonic surface features via a “descent sphere” that will plunge into

Venus's clouds. Follow their development and discover more about Venus at solarsystem.nasa.gov/venus, and of course, continue your exploration of the universe at nasa.gov.



Venus and Jupiter continue to move closer together in the evening sky this month. Jupiter will continue its descent towards the horizon while Venus will continue to climb and will be visible in the evenings through mid-summer of 2023. It's a great year for Venus fans!

Image created with assistance from Stellarium

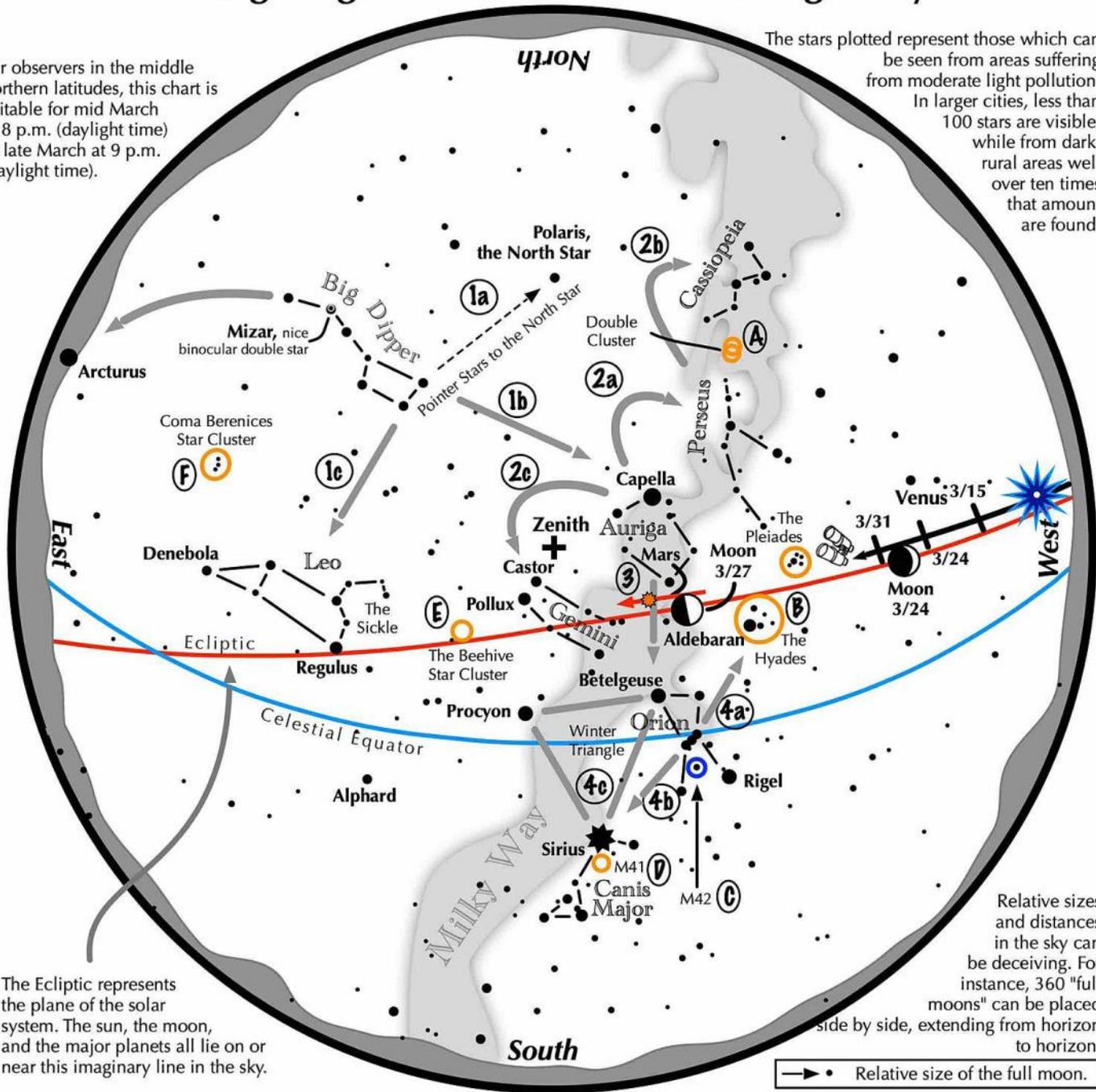


The top layers of Venus's cloud pop in this contrast-enhanced image, reprocessed with modern techniques from Mariner 10 data.

Navigating the mid to late March Night Sky

For observers in the middle northern latitudes, this chart is suitable for mid March at 8 p.m. (daylight time) or late March at 9 p.m. (daylight time).

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 March night sky: Simply start with what you know or with what you can easily find.

- 1 Above the northeast horizon rises the Big Dipper. Draw a line from its two end bowl stars upwards to the North Star. Its top bowl stars point west to Capella in Auriga, nearly overhead. Leo reclines below the Dipper's bowl.
- 2 From Capella jump northwestward along the Milky Way to Perseus, then to the "W" of Cassiopeia. Next jump southeastward from Capella to the twin stars of Castor and Pollux in Gemini.
- 3 Directly south of Capella stands the constellation of Orion with its three Belt Stars, its bright red star Betelgeuse, and its bright blue-white star Rigel.
- 4 Use Orion's three Belt stars to point northwest to the red star Aldebaran and the Hyades star cluster, then to the Pleiades star cluster. Travel southeast from the Belt stars to the brightest star in the night sky, Sirius. It is a member of the Winter Triangle.

Binocular Highlights

A: Between the "W" of Cassiopeia and Perseus lies the Double Cluster. **B:** Examine the stars of the Pleiades and Hyades, two naked eye star clusters. **C:** M42 in Orion is a star forming nebula. **D:** Look south of Sirius for the star cluster M41. **E:** M44, a star cluster barely visible to the naked eye, lies to the southeast of Pollux. **F:** Look high in the east for the loose star cluster of Coma Berenices.



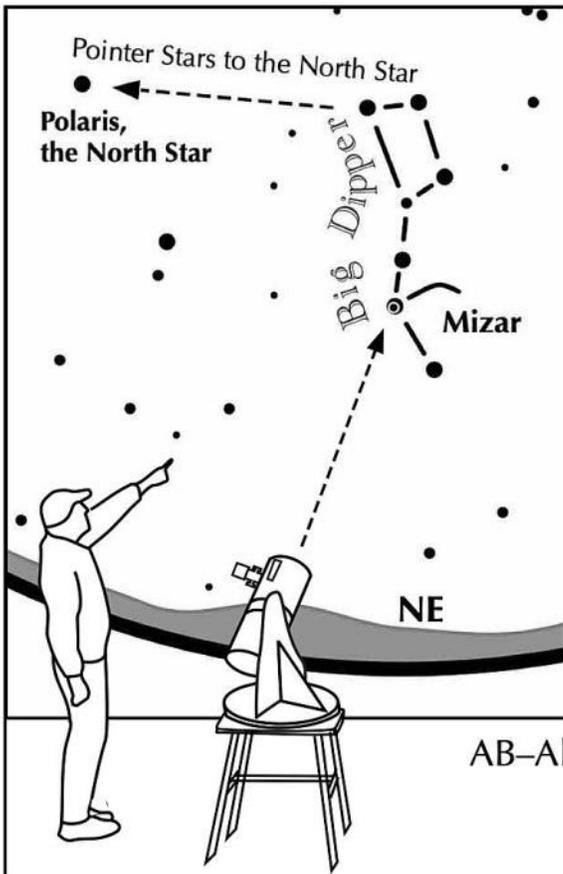


Other Suns: Mizar

How to find Mizar on a March evening

Look northeast toward the Big Dipper. The second star from the end of the Dipper's handle is Mizar. The 4th magnitude Alcor is immediately next to it.

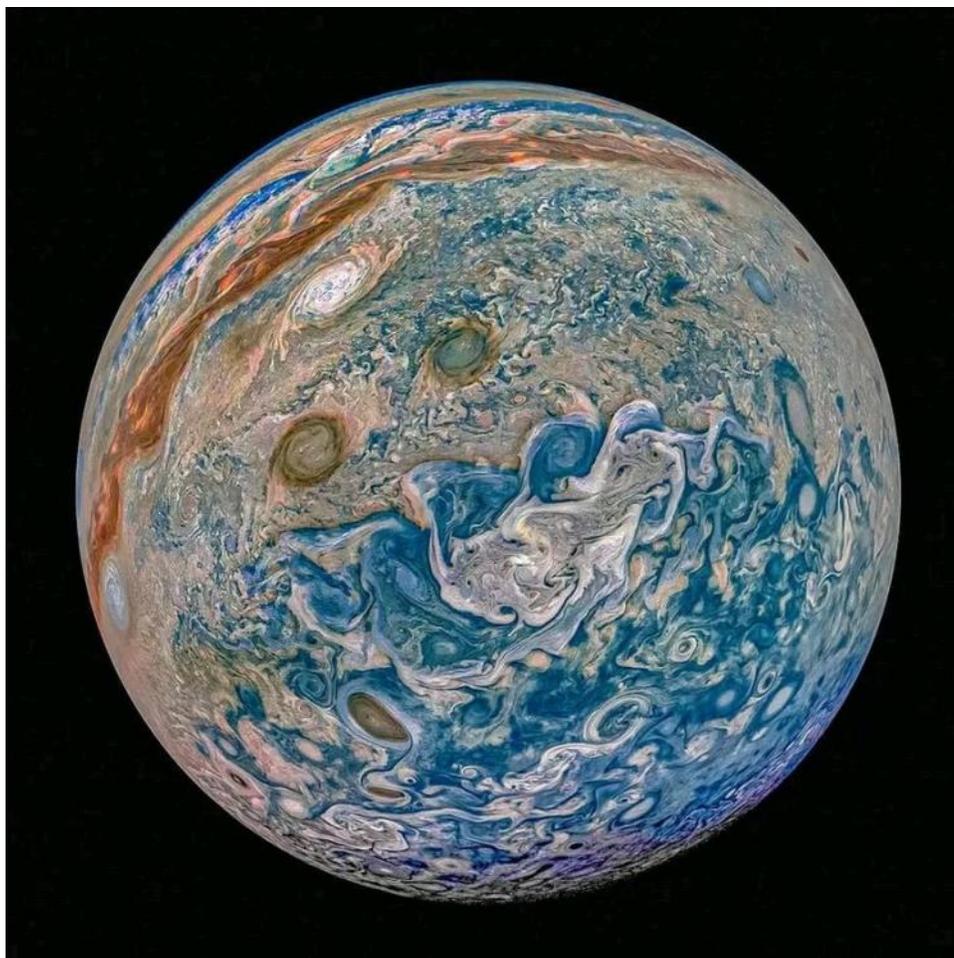
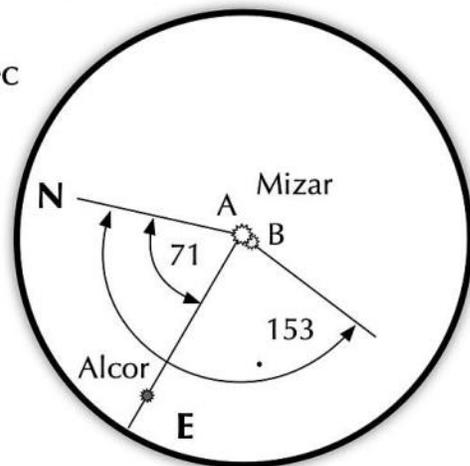
Suggested magnification: >40x
Suggested aperture: >3 inches



Mizar

A-B separation: 14 sec
A magnitude: 2.2
B magnitude: 3.9
Position Angle: 153 °
A color: white
B color: pale green?

AB-Alcor separation: 11 min
Alcor: 4.0
PA: 71°



NASA recently released this rather unusual image of the planet Jupiter taken by the orbiting JUNO spacecraft. The spacecraft's name is an acronym for **J**upiter **N**ear-**P**olar **O**rbiter. The polar orbit thus enables striking views of the planet from a different perspective that we are traditionally accustomed to seeing. This view is looking down at the planet's pole and the detail is amazing. One interesting aspect of the JUNO mission is that all of the raw image data from the spacecraft is made available to the public and can be downloaded and processed by citizen scientists.



Auburn Astronomical Society

Application for Membership

To insure that our records are accurate, please print information clearly

Name: _____

Address: _____

City: _____ State: _____ ZIP: _____

Phone: _____ Date of Application: ____/____/____

E-Mail: _____

Telescopes owned (if any): _____

Area(s) of special interest: _____

Enclose \$20.00 for regular annual membership, payable in January. *Full-time* student membership is \$10.00.

For **NEW** members joining after January, refer to the prorated dues table below for the month you are joining:

Jan \$20.00	Feb \$18.33	Mar \$16.66	Apr \$14.99	May \$13.33	Jun \$11.66
Jul \$10.00	Aug \$8.33	Sep \$6.66	Oct \$4.99	Nov \$2.33	Dec \$1.66

New—Just Joining

Renewal

Please make checks payable to: Auburn Astronomical Society and return this application with your payment to:

Auburn Astronomical Society
c/o John Wingard, Sec/Treasurer
5 Wexton Ct.
Columbus, GA 31907

Note: At this time we do not have an option for online payment of dues.

The Auburn Astronomical Society is a member of the Astronomical League, the national organization representing astronomy clubs throughout the United States. As a club benefit, paid members of the Auburn Astronomical Society are eligible to received quarterly issues of *The Reflector*, the official publication of the Astronomical League. It will be mailed to the address that you provided above but could be delayed somewhat until their mailing lists are updated.

For additional information about our club, please go to our website www.auburnastro.org . You can also follow us on our Facebook page. Just search for "Auburn Astronomical Society."