ASTROFILES

Auburn Astronomical Society Newsletter

April 2022 *Newsletter Editor — John Wingard — jwin1048@gmail.com*

Moon Phases

April 23 — Last Quarter

April 30 — New Moon

May 8 — First Quarter

May 16 — Full Moon

May 22 — Last Quarter

May 30 — New Moon

June 7 — First Quarter

June 14 — Full Moon

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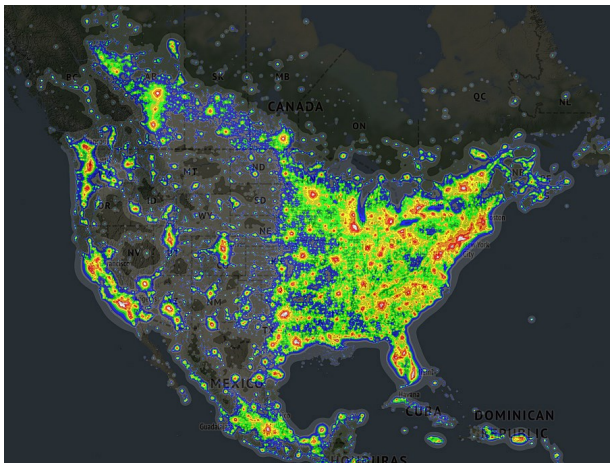
News and events

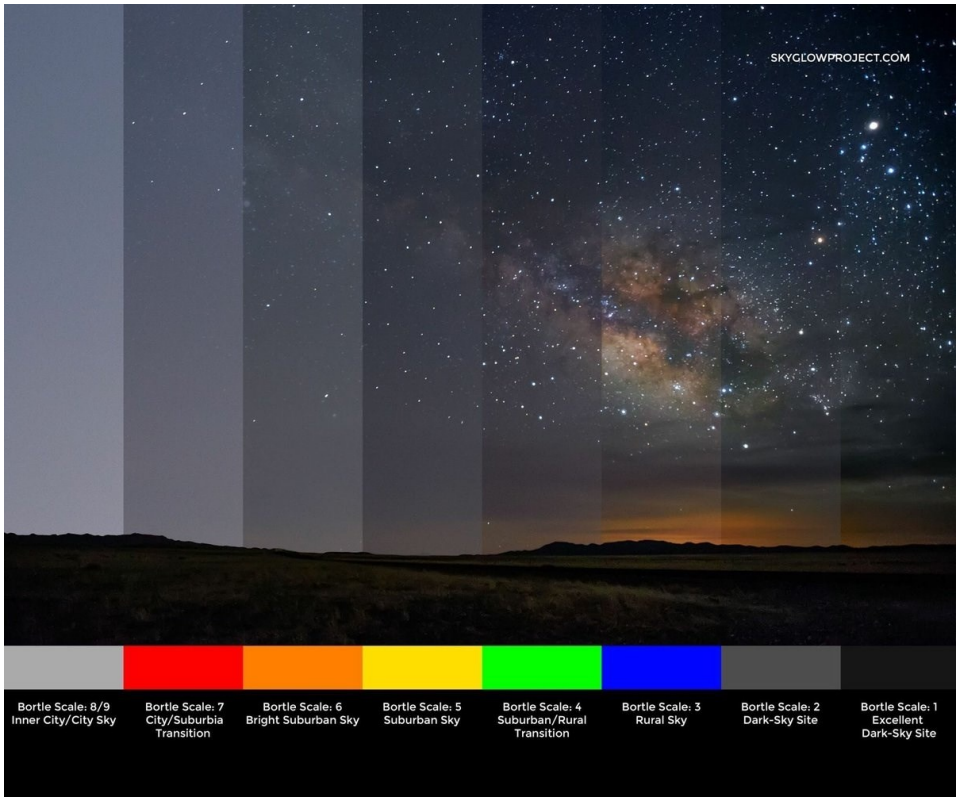
On the evening of Friday, April 8, 2022, the AAS conducted a stargaze for the Alabama Nature Center in Millbrook, AL. About five or six AAS members showed up to assist. According to AAS President Allen Screws the clouds began to move in and basically prevented them from viewing anything except the moon. Thanks to the AAS members that did come out and the ANC organizers gave the club some money for any attending member to cover gas or travel expenses. If anyone would like to be reimbursed, please let me know. Otherwise, we will just put this money into the club's general fund. The photo below, courtesy of Allen Screws, shows some of the members in the process of setting up their equipment prior to sunset.

Thanks also to everyone that responded to our recent survey on potential meeting days and times. We haven't come to a final decision at this time but are considering having a quarterly meeting on a Saturday in the Auburn area.

The week of April 22-26, 2022 was designated as International Dark Skies Week. The objective was/is to focus attention to the increasing problem of light pollution that directly affects our astronomy activities. As a result, many cities and communities are beginning to take measures to install and upgrade outdoor lighting fixtures that help to direct necessary lighting downward on needed areas while preventing it from being directed upward towards the sky. However, much more is needed to address this problem. This map of the U.S. at night illustrates just how severe the problem is right now. As you can see, basically the entire eastern half of the country is bathed in light pollution, whereas most of the western half of the country is in much better shape.

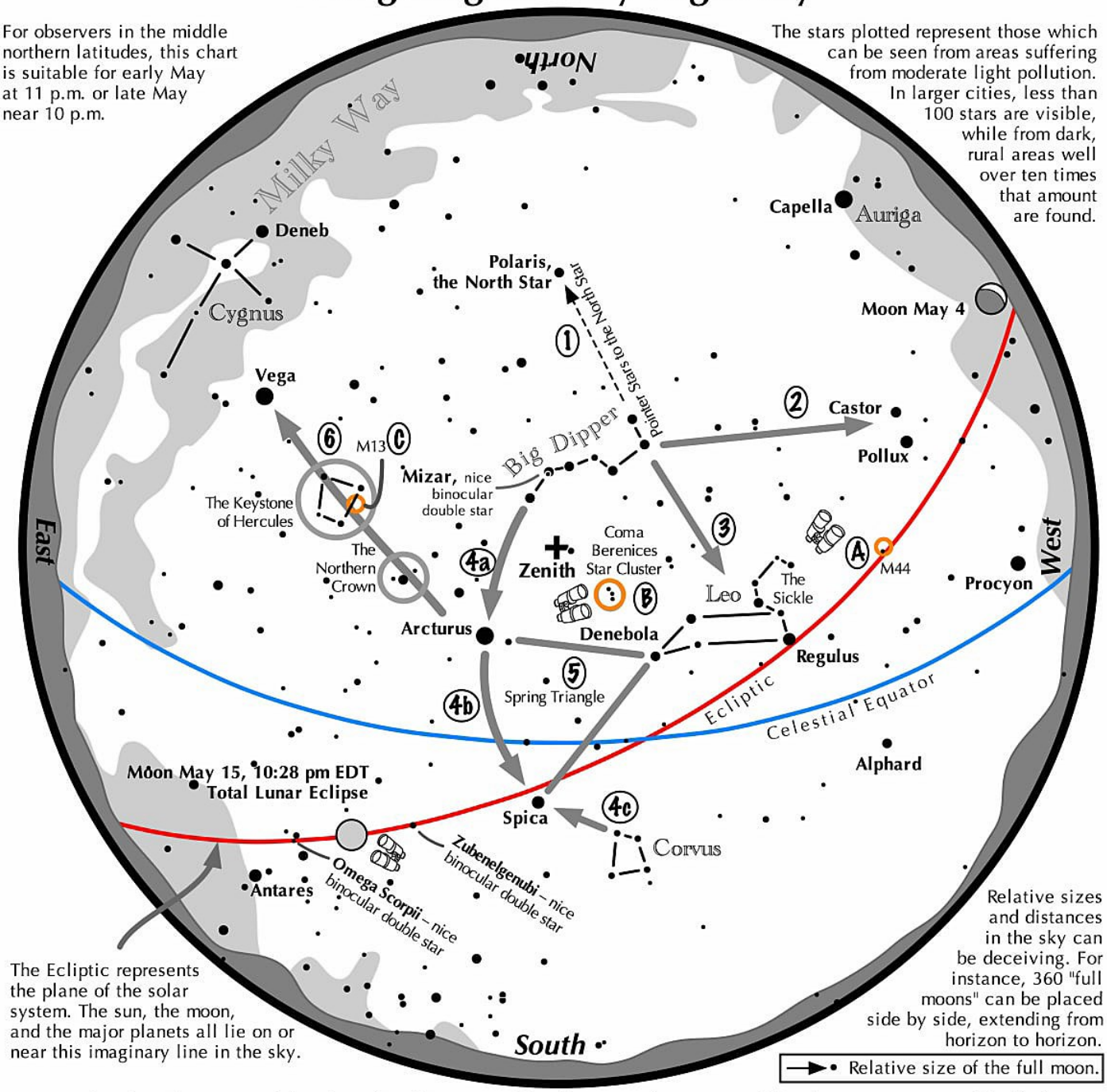


To aid amateurs in determining the level of light pollution at their particular location, a convenient scale was developed by John E. Bortle and first published in Sky & Telescope magazine in February of 2001. The Bortle scale is a nine-level numeric scale that indicates the night sky's brightness at a particular location. It quantifies the astronomical observability of celestial objects and the interference caused by light pollution. It can be used to help amateur astronomers evaluate the darkness of an observing site, and secondarily, to compare the darkness of multiple observing sites. Your editor happens to live in a Bortle 7 zone, which pretty much washes out anything but the brighter stars and the majority of the complete constellation patterns are not even visible. Thus, to do any serious observing, one must travel to a darker site. Most young adults and others that have always lived in and around major cities have never had the opportunity to see the wonders of the night sky due to all of the light pollution.



For more information and resources on the effort to reduce light pollution you can contact the International Dark Sky Association at their website www.darksky.org

Navigating the May Night Sky

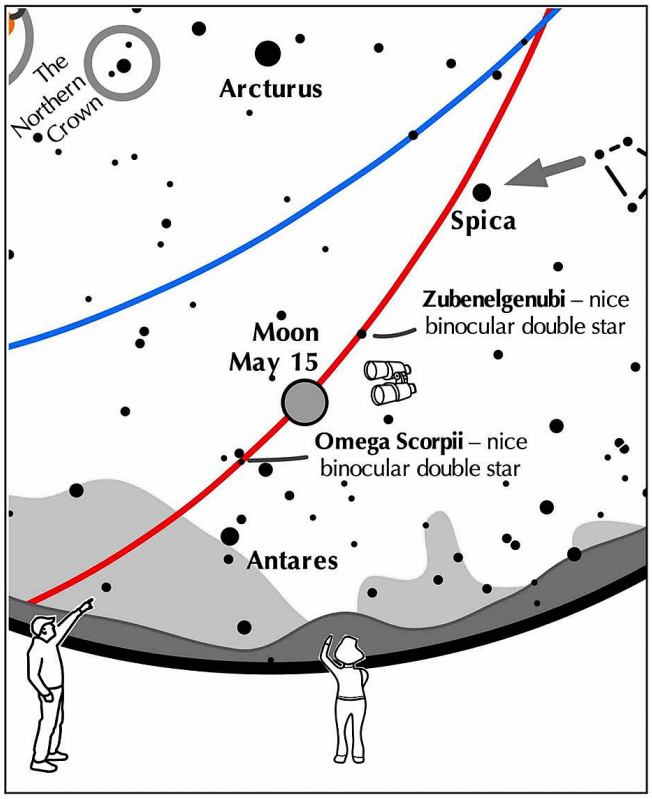


Navigating the May night sky: Simply start with what you know or with what you can easily find.

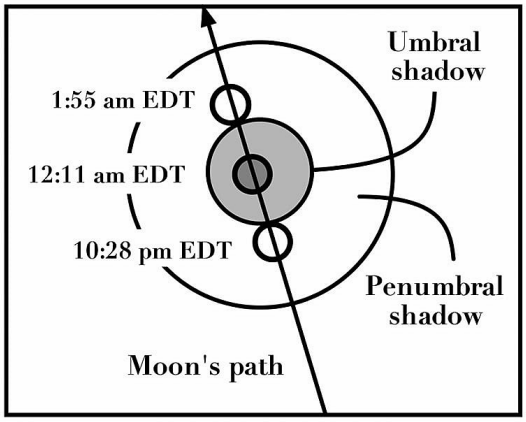
1. Extend a line northward from the two stars at the tip of the Big Dipper's bowl. It passes by Polaris, the North Star.
2. Through the two diagonal stars of the Dipper's bowl, draw a line pointing to the twin stars of Castor and Pollux in Gemini.
3. Directly below the Dipper's bowl reclines the constellation Leo with its primary star, Regulus.
4. Follow the arc of the Dipper's handle. It first intersects Arcturus, then continues to Spica. Confirm Spica by noting that two moderately bright stars just to its southwest form a straight line with it.
5. Arcturus, Spica, and Denebola form the Spring Triangle, a large equilateral triangle.
6. Draw a line from Arcturus to Vega. One-third of the way sits "The Northern Crown." Two-thirds of the way hides the "Keystone of Hercules." A dark sky is needed to see these two dim stellar configurations.

Binocular Highlights
A: M44, a star cluster barely visible to the naked eye, lies to the southeast of Pollux. **B:** Look near the zenith for the loose star cluster of Coma Berenices. **C:** M13, a round glow from a cluster of over 500,000 stars.

If you can observe only one celestial event in the evening this May, see this one.



View to the southeast on May 15 at 11 pm EDT, 8 pm PDT (near sunset)



The Moon slides through a total eclipse

In the evening hours of May 15, the brilliant full moon slides into Earth's shadow.

- Even though the partial umbral eclipse begins at 10:28 EDT, darkening may not be noticed for another 5 minutes.
- When totality is reached, the full moon's brilliance is gone, allowing the stars to appear. Can you spot the wide double star Zubenelgenubi to the moon's upper right? How about red Antares rising in the southeast?
- At mid eclipse, what color is the moon? How red is it?
- During the partial phases, can you notice that the shadow's edge is not straight, but curved?

This article is distributed by NASA Night Sky Network

The Night Sky Network program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit night-sky.jpl.nasa.gov to find local clubs, events, and more!

Night Lights: Aurora, Noctilucent Clouds, and the Zodiacal Light

David Prosper

Have you spotted any “night lights”? These phenomena brighten dark skies with celestial light ranging from mild to dazzling: the subtle light pyramid of the zodiacal light, the eerie twilight glow of noctilucent clouds, and most famous of all, the wildly unpredictable and mesmerizing aurora.

Aurora, often referred to as the northern lights (aurora borealis) or southern lights (aurora australis), can indeed be a wonderful sight, but the beautiful photos and videos shared online are often misleading. For most observers not near polar latitudes, auroral displays are relatively rare and faint, and without much structure, more gray than colorful, and show up much better in photos. However, geomagnetic storms can create auroras that dance and shift rapidly across the skies with several distinct colors and appear to observers much further away from the poles - on very rare occasions even down to the mid-latitudes of North America! Geomagnetic storms are caused when a magnetic storm on our Sun creates a massive explosion that flings a mass of particles away from its surface, known as a Coronal Mass Ejection (CME). If Earth is in the path of this CME, its particles interact with our planet’s magnetic field and result in auroral displays high up in our ionosphere. As we enter our Sun’s active period of its 11-year solar cycle, CMEs become more common and increase the chance for dazzling displays! If you have seen any aurora, you can report your sighting to the Aurorasaurus citizen science program at aurorasaurus.org

Have you ever seen wispy clouds glowing an eclectic blue after sunset, possibly towards your west or northwest? That wasn’t your imagination; those luminescent clouds are noctilucent clouds (also called Polar Mesospheric Clouds (PMC)). They are thought to form when water vapor condenses around ‘seeds’ of dust from vaporized meteorites - along with other sources that include rocket launches and volcanic eruptions - around 50 miles high in the mesosphere. Their glow is caused by the Sun, whose light still shines at that altitude after sunset from the perspective of ground-based observers. Noctilucent clouds are increasing both in frequency and in how far south they are observed, a development that may be related to climate change. Keeping in mind that observers closer in latitude to the poles have a better chance of spotting them, your best opportunity to spot noctilucent clouds occurs from about half an hour to two hours after sunset during the summer months. NASA’s AIM mission studies these clouds from its orbit high above the North Pole: go.nasa.gov/3uV3Yj1

You may have seen the zodiacal light without even realizing it; there is a reason it’s nicknamed the “false dawn”! Viewers under dark skies have their best chance of spotting this pyramid of ghostly light a couple of hours after sunset around the spring equinox, or a couple of hours before dawn around the autumnal equinox. Unlike our previous two examples of night lights, observers closer to the equator are best positioned to view the zodiacal light! Long known to be reflected sunlight from interplanetary dust orbiting in the plane of our solar system, these fine particles were thought to originate from comets and asteroids. However, scientists from NASA’s Juno mission recently published a fascinating study indi-

cating a possible alternative origin: dust from Mars! Read more about their serendipitous discovery at: go.nasa.gov/3Onf3kN

Curious about the latest research into these night lights? Find news of NASA's latest discoveries at nasa.gov

Comet NEOWISE flies high above a batch of noctilucent clouds in this photo from Wikimedia contributor Brwynog.

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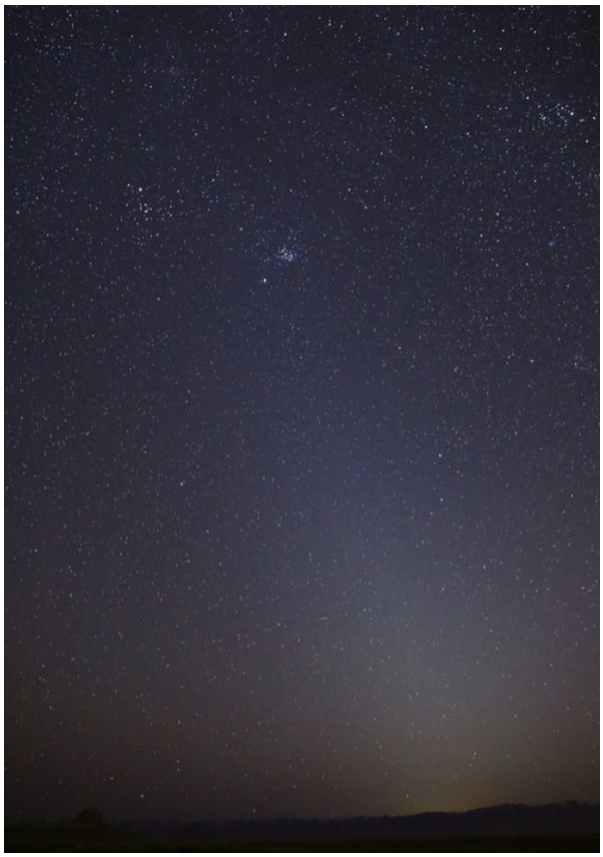

The zodiacal light extends into the Pleiades, as seen in the evening of March 1, 2021 above Skull Valley. Utah. The Pleiades star cluster (M45) is visible near the top.

Credit and source:: NASA/Bill Dunford .https://www.flickr.com/photos/gsfc/51030289967

A sampling of some of the various patterns created by aurora, as seen from Iceland in 2014. The top row photos were barely visible to the unaided eye and were exposed for 20-30 seconds; in contrast, the bottom row photos were exposed for just 4 seconds- and were clearly visible to the photographer, Wikimedia contributor Shnuffel2022.

License and source: CC BY-SA 4.0 https://commons.wikimedia.org/wiki/File:Aurora_shapes.jpg

Auburn Astronomical Society

Membership Application Form

Name:
_____

Address:
_____

City: _____ **State:** _____ **Zip:** _____

Phone: _____ **Date of Application*** _____/_____/_____

E-mail:
_____

Telescope(s):
_____

_____

Area(s) of special interest:
_____

_____

Enclose: $20.00 for regular membership, payable in January. *Full-Time* student membership is half the Regular rate.

*** For *NEW* members joining after January, refer to the prorated Dues Table below:**

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

Make checks payable to: Auburn Astronomical Society and return this application to:

Auburn Astronomical Society
c/o John Wingard
5 Wexton Court
Columbus, GA 31907

For questions about your dues or membership status, contact: jwin1048@gmail.com

Thank you for supporting the Auburn Astronomical Society