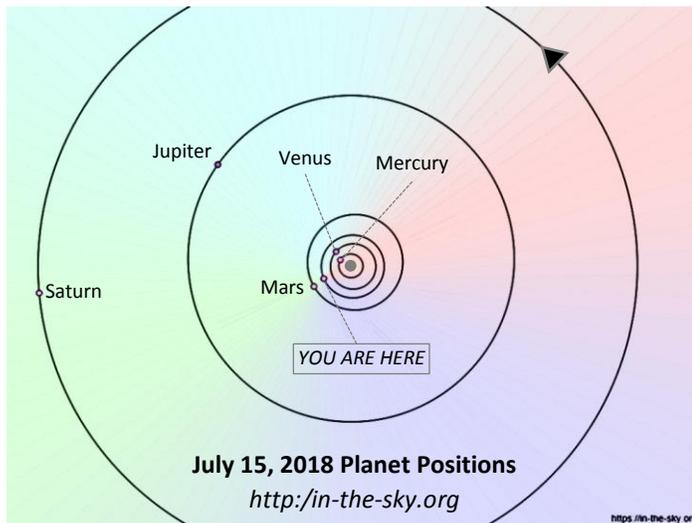


Travels in Space and Time...

July offers... sigh... hazy nights with poor seeing, awful transparency, low clouds, and endless rain... I'm a little frustrated.... BUT, if you do find yourself under a clear-ish sky, July will be a great month for views of the planets and the center of our own galaxy! And July 2018 is the Month for Mars! More on that as we journey out... so warm up those telescopes, and let's get started!

Solar system. The month opens with a waning **moon**, rising after midnight. The next **new moon is July 12**. It will be **full again on July 27**; and on that day, if you find yourself in Europe, Asia, Africa, or Australia, you will witness the longest total *lunar eclipse* this century (over 100 minutes)... but it won't be visible to us in North America (meh).



You can see all 5 bright planets this month. Start by Looking west at sunset and find **Venus**, still prominent above the western horizon. In July it appears at near-½ phase through a telescope, and will approach a crescent before it eventually disappears in the glare of the sun later this summer.

Now look down and to the right of Venus at sunset (for goodness sake don't look directly at the sun!) and you will see another bright object – **Mercury**, the closest planet to the sun. It will be easiest to see around July 12 when it reaches “greatest elongation east” which means it appears “farthest from the sun” (from the Earth) on that day.

Now face south, and you will see **Jupiter**, big and bright (magnitude -2.2) directly south (still in Libra) at sunset. As it gets darker you will see that Jupiter is half way between

first magnitude star Spica in the southwest (Virgo) and Antares (Scorpius) in the southeast. Antares is a huge red giant and looks distinctly red, but don't be fooled – it's not Mars... be patient.

East of Antares, and dimmer than Jupiter at magnitude +0.1, **Saturn** appears in the southeast above the “teapot” of Sagittarius. Both planets are still beautiful in telescopes, but the weather limits detail views because of water and pollution hanging in the sky.

But the best is yet to come... Around 11pm, **Mars** will be rising in the southeast. It has been getting brighter since January and now, early this month it shines as bright as Jupiter. By the end of July Mars will reach magnitude -2.7, making it the brightest object in the sky after the sun, moon, and Venus.

On July 27, Mars will be in opposition (the Earth will be exactly between the Sun and Mars). Then 3 days later, on July 30, Mars will be at closest approach to earth: a mere 35 million miles away (140x the earth-moon distance). This is the closest Mars has been to Earth since 2003 and it won't be this close again until 2035.

In fact, the Earth and Mars align every 2 years-50 days. Most years this is a less-than-impressive an event, but this year, as luck would have it, they are aligning during a time when their elliptical orbits bring them that much closer – and give us a great view! This is the year to catch some good views of our red neighboring planet through a telescope. Even small scopes will show some of the dark features on the planet.

Finally, if you are feeling really lucky, this month Pluto is at opposition on July 14. You'll find it about 15 minutes (1/4 degree) south of star 50 SGR in Sagittarius. But unless you know someone with access to Hubble, good luck. Shining at a blinding +14.2 magnitude (sarcasm intended), not many home scopes will be able to see it. Find 50 SGR on a chart and at least you found Pluto's neighborhood. That's something, right?

Deep Sky. This is a frustrating month for deep sky objects, due to the weather, but always worth a look. This is the season for globular clusters, as our night sky faces the center of the galaxy. Check out the globular clusters in and around the constellation Ophiuchus, as they are well placed for viewing directly south. We'll cover these and others next month.

- Jim

CAAA UP-dates

The July meeting will feature pediatrician and amateur astronomer Jim Feiste discussing "The Ophthalmology of Astronomy" – or how the eyes see in dim light. We will also be discussing elections / officers / website / social media. Come and be ready to work! 😊

Last month's outreach to Devil's Fork was well attended. We had several teachers from the surrounding counties, three representatives from the State Museum in Columbia, SC, as well as many students and families who showed up curious about the telescopes.

In July RAM and Stan will be again be conducting a 3rd and 4th solar viewing outreach for young campers at The Arts Center in Clemson. See the website for dates and times. The last event was successful and features in the local paper!

We will be talking about possibly doing star viewings prior to upcoming meetings, open to the general public. Assuming we get the library's permission, CAAA members will be encouraged to set up their scopes in the designated areas. More to come....

Finally, there will be a Mars viewing party at the Night Rabbit Observatory on Friday July 27. Bring a friend (we're nice), a swimsuit (there's a pool), some red food (we're hungry), and/or a telescope (we have sky).

Monthly Observation Challenges

Unaided Eye

- Venus and Mercury in the west at sunset
- Spica – Jupiter – Antares – Saturn - Mars
- Mars at Opposition
- Constellation Ophiuchus

Binoculars / Small Telescopes

- Venus at sunset – waning phase
- Jupiter and Saturn well placed for viewing
- Mars – look for dark and light areas, polar caps
- Globular clusters (M10, M12, etc.) in Ophiuchus

Notes and Sketches

