

New Braunfels Astronomy Club

March 18th, 2021

259th Meeting (Zoom 12)
(Agenda Below)

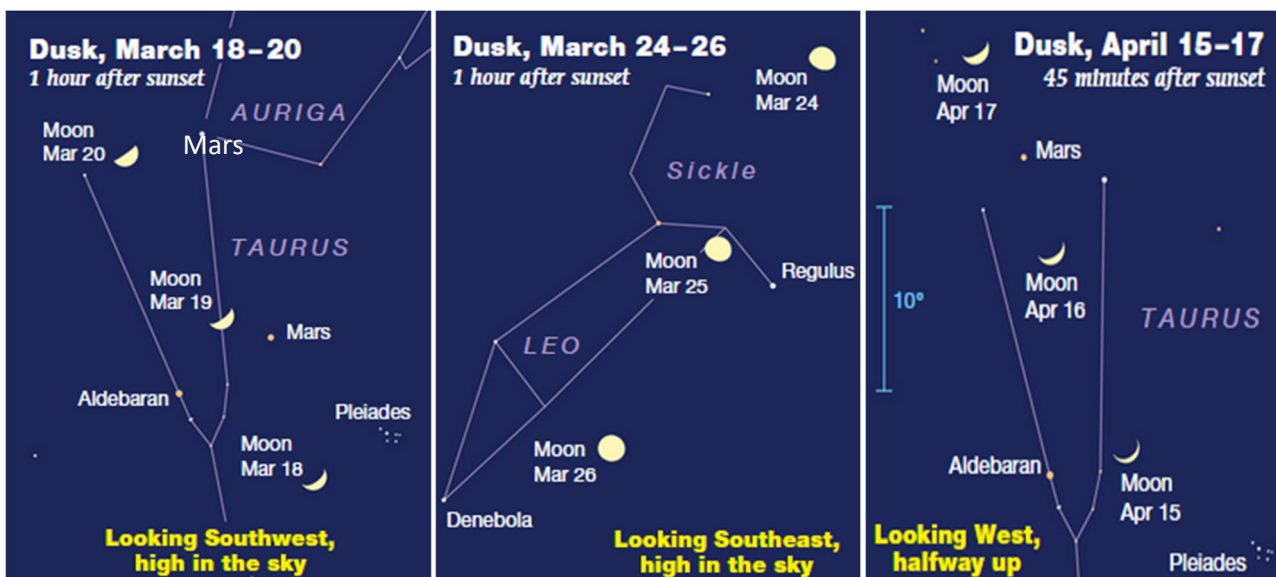
Larry's Celestial Calendar & Newsletter by Eric Erickson

284th Edition

Zodiacal Light
Pre-dawn Planets and Moon
Watch Io Transit Jupiter
Comet Atlas
Mars, the Moon, and the Pleiades

Highlight Calendar for Clear Skies

-From Sky and Telescope Magazine



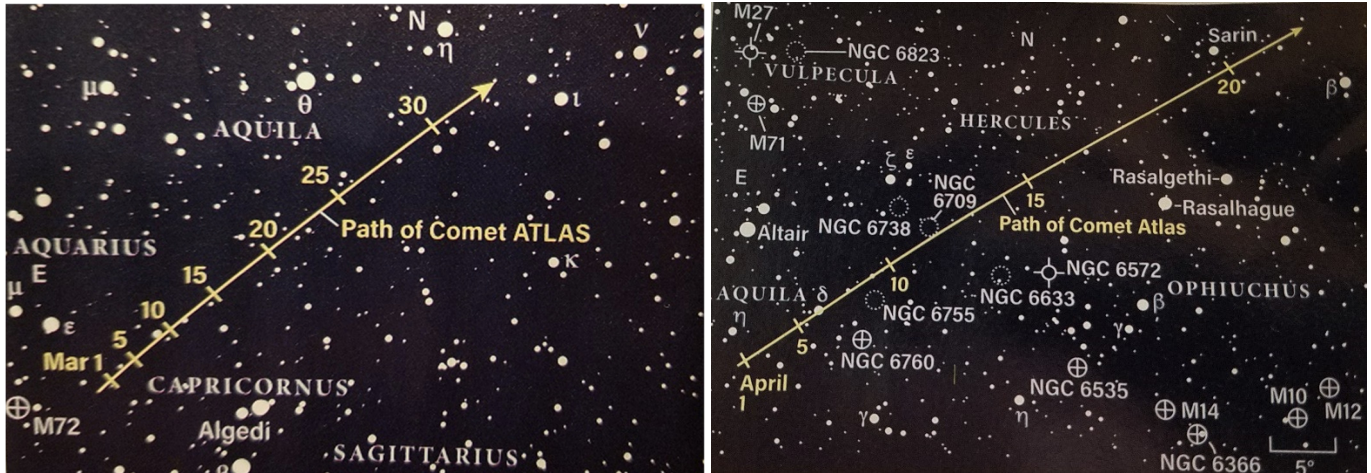


Solar System Observing

- ✚ **Mercury** is so low in the morning southeastern sky it is washed out by the Sun's glare. It will emerge as an evening planet in mid-April but still too low for quality observing.
- ✚ **Venus** is in superior conjunction with the Sun, returning to visibility in late April.
- ✚ **Earth** still spins, and we are still here to marvel at the wonders of our universe.
- ✚ **The Moon** joins Jupiter, and Saturn in the eastern pre-dawn sky for delightful sights – get up, put some coffee on, and enjoy.
- ✚ **Mars** is still visible high in the southern sky an hour after sunset. It joins up with the Moon and the Pleiades on March 18th, after sunset.
- ✚ **Mars Missions update:**
 - Hope: UAE's mission successfully inserted into Mars orbit on February 9. It will be studying Mars' atmosphere and climate.
 - Tianwen-1: China's mission successfully inserted into Mars orbit on February 10. It has an aggressive schedule, including an exploratory rover expected to touch down in May 2021.
 - Mars 2020 Perseverance: The USA's mission successfully landed the rover Perseverance on February 12. It was the first to use a "Sky-crane", employing thruster rockets and cables, gently lowering the rover to Mars' surface. Perseverance also has a sidekick...the Ingenuity helicopter (drone) that will be tested as a possible transport and exploration extension.
- ✚ **Jupiter** rises just before the Sun, along with Saturn, making some nice patterns with the Moon when it joins in.
 - On March 24th, Io will transit Jupiter's face starting at 6am CDT, preceded by Io's shadow transit.

- ✚ **Saturn** rises just before the Sun, along with Jupiter.
- ✚ **Uranus** is in Aries and heading for conjunction with the Sun on April 30.
- ✚ **Neptune** is in eastern Aquarius, going through superior conjunction with the Sun on March 26th. It will start rising before dawn in late April.
- ✚ **Comet(s)** Kuiper belt object comet C/2020 R4 (ATLAS) is in our late-night-pre-dawn skies. At magnitude 11 it is challenging visually but imagers have opportunities, see April below.

-From Astronomy Magazine



- ✚ **Zodiacal Light** is back for March and April showing a “false dusk” after sunset’s glow dims. We’re looking at backlit remnant dust and particles from comets and meteors in Earth’s orbital plane. Look west-southwest for a dim cone shaped light appearing from the horizon.

-From Astronomy Magazine



ISS viewing for New Braunfels (works for Canyon Lake too).

-From [Heavens Above](#)

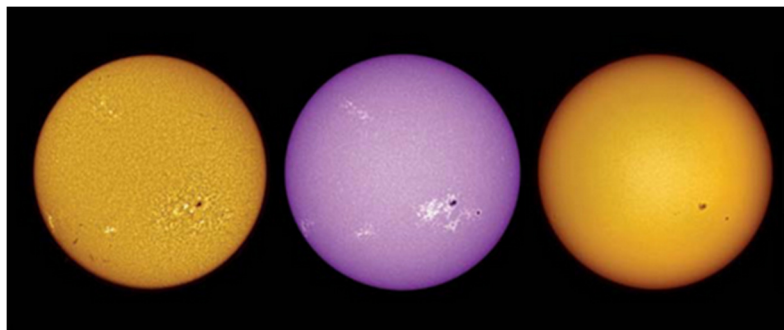
Date	Start Time	Start Loc	Max Alt °	End Loc	Note
03/18	21:05	W	10	NNE	Low along the horizon
03/19	20:22	WSW	27	NNE	Goes through Cassiopeia
04/04	20:46	NNW	19	ENE	
04/06	20:46	NW	66	SE	
04/08	20:49	NW	27	SSE	
04/20	06:24	SSW	21	NE	Passes SE of Saturn and Jupiter above the horizon
04/22	06:26	SW	89	NE	

My Observing Pick: The Sun

Giver of life, revered by uncounted cultures as a God. The Sun is a pretty ordinary class G yellow dwarf star. Why is it so special then? Us. We arrived as a consequence of this unremarkable star's arrival and so it should be we are awed by the Sun.

Observing the Sun requires careful safety preparations. The basic tool is a filter made of solar mylar film – certified for solar observing. It comes as pre-made cardboard glasses, mounted in cells ready for attaching to binoculars or telescopes, or as sheets ready for cutting and making your own filter. This filter produces a bluish-white image. Another option is aluminized glass specific for solar observation. It gives a yellow-orange image. Either is great for observing sunspots and solar eclipses. They simply reduce the total light energy passing through, by around 99.99%. Cost is low, anywhere from \$10 to \$300 depending on the arrangement and size.

There are specialty filter systems made to transmit only specific wavelengths or wavelength ranges and they tend to be expensive. The most used type is the hydrogen alpha (Ha) system, either as a complete telescope or as a filter system that can be attached to standard telescopes. Ha filtration produces images of solar plasma detail including prominences, spicules, and filaments. They are a lot more interesting. The lower priced systems start around \$1,000. Another popular narrow band filter is the calcium (Ca-K) filter that produces a different view and gives a purple image. They too are pricy, depending on the wavelength narrowness.



▲ **SOLAR TRIPTYCH** Martin Wise used an 80-mm refractor on Dec. 1, 2020 to make this set of images of sunspot region 2786 at three different wavelengths. *From left:* Hydrogen alpha (656.3 nm), which reveals the Sun's upper chromosphere; calcium K (393.4 nm), the lower chromosphere; and visible light (540 nm), the photosphere that underlies the chromosphere.

-From [Sky and Telescope](#)

We are currently in Solar Cycle 25, and it appears to be livening up.

The Golden Apples of the Sun (1953)

The Parker Solar Probe (2018)

I borrow a title from one of my favorite authors, Ray Bradbury.

In Ray Bradbury's short story from 1953, a manned rocket travels close to the Sun and gathers some of the Sun's essence. Based on the story's text the astronauts appear to be traveling in a giant refrigerator, using liquid ammonia for the coolant. They grab some of the Sun in a bucket, close the bucket lid, stow it on board, and head "north", away from the Sun. To Earth I presume.

That was their target, and by 1953 standards it was an achievement way beyond technology of the day. However, they would have needed to penetrate to the core to capture the Sun's essence. Outside the core are swarming, seething rivers and tsunamis of photons and plasma. That would certainly be interesting and valuable to collect, but to me it's not the golden apple. Grabbing some fusing hydrogen, now that's the ticket. So what if there is no technology known able to achieve this. Some day?

Back to reality, the Parker Solar Probe (PSP) was successfully launched on August 12th, 2018. What's so special about PSP? It's doing what Ray Bradbury's spaceship did, except it isn't manned and doesn't use a bucket. It uses instruments to measure what's going on 3.8 million miles above the Sun's surface. By contrast, Mercury gets 29 million miles from the Sun. It is traveling in the Sun's atmosphere, the lower corona, with temperatures of 2500 degrees F and intense radiation. PSP gets closer to the Sun than any other probe so far.

Unlike the giant refrigerator in Bradbury's story, PSP's instruments are protected by a 4.5-inch-thick shield made of carbon-carbon composite. This shield faces the Sun continuously. All the instruments on board are located well back and in the central portion of the shield's shadow. This placement also protects them from radiation. Without the shield...toast in 30 seconds or so. Very expensive toast.

With so many other probes already sent to and studying the Sun, this seems like overkill, just collecting data to have more data. Well, you can't have too much data, but that's not the reason for sending PSP. As we learn more about our closest star's behavior we understand more about risk to life on earth. Our Sun is a life provider, but it can also be disruptive. As we understand and tally the risk to our civilization posed by a severe Solar Flare, or Coronal Mass Ejection, protecting our satellites and electrical grid becomes vitally important.

PSP's data about magnetic field dynamics, energy flow, solar wind, and mechanisms of transport for energetic particles will add to our ability to predict significant solar events...and prepare.

Eric Erickson

Imagining Imaging: Platform for club imagers...images and imagers needed!

Come on imagers – let's have something for next month! Send me your suggestions.

New Braunfels Astronomy Club Meeting

- Open meeting and introduce new members
- Interesting observations, experiences

- Show and tell

- What's in our sky this month?
 - Newsletter – Eric Erickson
- What's going on – events, outreach

- Main feature(s)

- Open for discussion

- Feedback and close meeting

Coming up: OUR 260th ASTRONOMY CLUB MEETING

April 22nd, 2021, from 7 – 9:00 pm

ZOOM meeting

New Braunfels Astronomy Club

astronomynbtx.org



Astronomy Friends New Braunfels

facebook.com/groups/354953995432792/



Comal County Friends of the Night Sky

facebook.com/groups/166098014710276/

Website comalcountyfriendsofthenightsky.org/

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