

New Braunfels Astronomy Club

Texas, USA

February 21st, 2019

236th Meeting

Larry's

Celestial Calendar & Newsletter

February 21st to March 21st, 2019 260th Edition

Early Bird Special: The Moon and Planets Dance
Daylight Savings Starts March 10th
Jupiter's Moons up Front
Vernal Equinox March 20th
Zodiacal Light?

Observer's Highlight Calendar for Clear Skies

Month **Date** **Time/Direction** **Event**

Month	Date	Time/Direction	Event
Feb	21+	After sunset; W	Get to a dark site and hopefully see zodiacal light, a hazy cone of light pointing upward. It's caused by solar system dust reflecting sunlight.
Feb	26	5:28 AM CST	Last Quarter Moon
Feb	28	Dawn; SSE	A waning crescent Moon teams up with Antares, Jupiter, Saturn, and Venus
Mar	1-3	Dawn; SE	See above
Mar	6	10:04 CST	New Moon
Mar	10	2 am	Daylight Saving Time starts
Mar	12-13	Evening; WSW	A waxing Moon is close to the Hyades in Taurus
Mar	14	5:27 am CDT	First Quarter Moon
Mar	18	4:00 am, 5:00 am CDT	Europa and Ganymede slip in front of Jupiter
Mar	20	4:58 pm CDT	Vernal Equinox
Mar	20	8:43 pm CDT	Full Moon

Solar System Roundup

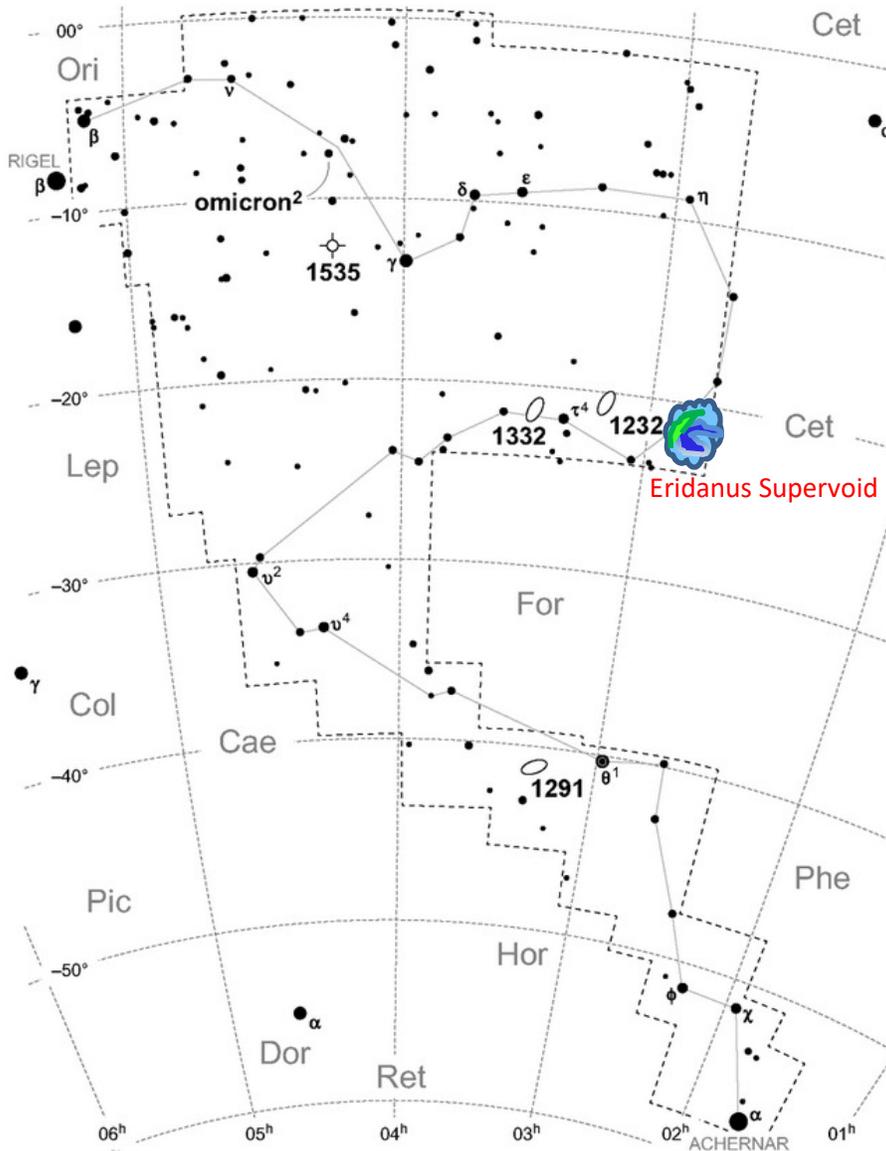
- ✚ **Mercury** is an evening “star” in late February and as good as it gets. It starts to fade in early March.
- ✚ **Venus** is a morning “star”, rising earlier each day and brilliant of course. It shares the early morning sky with Jupiter, Saturn and the Moon
- ✚ **Earth** still spins, and we are still here to marvel at the wonders of our universe
- ✚ **The Moon** dances with Saturn, Jupiter, Venus, and Antares
- ✚ **Mars** is still bright but fading in the southwest.
- ✚ **Jupiter** is visible in pre-dawn hours, climbing higher in the southeast and can be seen with Venus and Saturn. Europa and Ganymede transit on the morning of March 18th
- ✚ **Saturn** is now a morning traveler, visible in the southeast, with Jupiter and Venus
- ✚ **Uranus** is not a good target now
- ✚ **Neptune** is not a good target now
- ✚ **Comet(s)**
 - 46P/Wirtanen is in Ursa Major, heading to Leo Minor but losing brightness
- ✚ **ISS Viewing for New Braunfels (works for Canyon Lake too). After 5 am and before midnight.**

Date	Start Time	Start Loc	Max Alt °	Travel
02/22	06:29	SW	54	NE
02/24	06:25	W	19	NE
03/13	07:19	NW	25	SE
03/15	07:12	NW	78	SE
03/17	07:07	WNW	29	SE
03/19	20:21	SSW	26	NE
03/20	21:06	SW	38	NE
03/21	20:14	SW	89	NE

My Observing Pick: Eridanus, the River

Who doesn't like rivers! As the 6th largest constellation Eridanus winds its way in southern hemisphere from Rigel in Orion all the way to Phoenix. Consequently, most northerners cannot see the entire constellation, but we can see most. One intriguing phenomenon in Eridanus is a “supervoid”, an area devoid of constellations about a billion light years across. On the Cosmic Microwave Background (WMAP) it appears as a cold spot

(see the map below) and there is speculation that it might represent quantum entanglement between our universe and another.



Name	Object Type	Mag	Location/Information	Description
NGC 1535	Planetary Neb	9	See map, 2000 light years distant	Bright, compact blue-gray
NGC 1332	Galaxy	10	See map, 70 million light years distant	Compact spiral
NGC 1232	Galaxy	10.9	See map, 61 million light years distant	Face on spiral
NGC 1291	Galaxy	9.4	See map, 33 million light years distant	Face on "Ring" galaxy – bright core with a surrounding ring structured band of stars

Life in the Red

We are a lucky bunch; our home planet is nestled in just the right place orbiting a friendly yellow dwarf star. OK friendly is an exaggeration, the Sun is a beast, a gigantic continuous fusion explosion controlled only by its own immense gravity. From our vantage point 93 million miles away though, it's just right.

What would it be like to switch places with someone living around a red star? Let's look at the differences.

I mentioned above that our Sun is a yellow dwarf. That's right, it's a little star when compared with all known star sizes. It's classified as a G2V main sequence star: G for its color, 2 for its temperature, V for its luminosity/size. Main sequence means these stars comprise the majority and guess what, they're dwarf stars! While the Sun is called yellow, it's really closer to white.

One thing about stars is you have to be in just the right place, a distance range where life can exist called the habitable zone. Where this zone exists depends on your home star's characteristics. All other things being equal if our Sun were larger or more luminous life on Earth would either be very different or non-existent.

What about moving to a red star? To live comfortably, we have to consider location, location, location. Habitable zone. There are red dwarf stars, big red sub-giants, mammoth red giants, and ginormous red super-giant stars. Each has a habitable zone, with qualifications. Red giant stars tend to be unpredictable and prone to outbursts that would be dangerous to life. Let's check out a red dwarf.

Red dwarf stars are very small, often less than half the mass of our Sun. Their habitable zone then is a lot closer because its energy output is so much less than the Sun's. Well, that's a problem. A planet in the habitable zone of a red dwarf is likely to become tidally locked with its star. Gravitational friction between the star and planet causes the planet's rotation to slow until eventually one side faces the star continually. One side in constant light and the other in dark. That's a prescription for constant extreme, chaotic climate swings. Not good for life. It appears Red dwarf stars are also prone to outbursts of radiation and mass ejections of plasma. Red stars are not good candidates for living.

So, let's make our visit a quick one. The star will still be so bright it looks whitish, but the sky is a warmer hue, and everything will have a warm, orangish glow. Star-sets will be deep red.

Turns out yellow dwarf stars are the most stable (white dwarfs are no longer stars – another topic).

We are a lucky bunch.

Coming up: OUR 237th ASTRONOMY CLUB MEETING

Thursday, **March 21st**, 2019, from 7 – 9:00 p.m., held in the conference room of TJ's restaurant on Loop Road (337). Have dinner, snack, dessert, and/or a beverage if you like. The New Braunfels Astronomy Club can be reached at www.astronomyntx.org

Eric Erickson ewandnl@yahoo.com