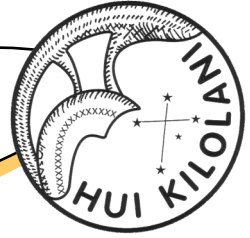


THE ASTRONEWS



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March 2023

www.hawastsoc.org

A word from your editor by Sapavith 'Ort' Vanapraks

Since January, Hawaiian Astronomical Society has reopened public star parties for both in-town (Geiger Community Park & Kahala Community Park) and dark site (Dillingham Airfield). The in-town public star parties were canceled both in January and February due to bad weather. Dark site public star parties had decent weather in the first 2 months for people to enjoy. Come out and join us at the March party.

I lied. Meteor Log by Tom Giguere is returning this month. There were several meteor events that happened in February. One was a predicted meteor in Europe. The other was a large fireball seen over multiple states in the US. Check the details in his log on page 7.

Comet C/2022 E3 ZTF made a close approach to Mars on Friday, 2/10/2023, evening. Several of the club members were out fighting the wind at their convenient locations near home. We exchanged chat in Discord. Steven and I were able to capture Mars and Comet E3.



2 min exposure using the Tri Band filter with adjusted curves by Steven Chun.

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Upcoming Events:

- The next Board meeting is Sun., Mar. 5th 3:30 PM. **(Zoom Meeting)**
- The next meeting is on Tue., Mar. 7th at the Bishop Museum at 7:30 PM. —**Hybrid (In person and Zoom) Meeting**
- Bishop Museum's planetarium show "The Star Tonight" is every 1st Saturday, 3/4/2023, of the month at 7:00 PM

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President's Message March 2023

Our March hybrid meeting went about as well as could have been expected. Many thanks to Steve Chun and Joanne Bogan for getting everything to work. We'll do another hybrid meeting in March. We'll learn as we go.

The February star party at Kahala Community Park had marginal weather, but it was better than January. Sue Girard and I were able to show visitors the Moon and Jupiter, Mars, and Venus between clouds and showers. My tarp came out a few times, but after rain chased away the initial crowd, some more people came by. It's good to be back at it.

A new study using Kepler and Gaia data estimates that there are at least 300 million Earth-like planets in our galaxy. This number is dominated by the potentially habitable planets that exist in roughly half the systems with a Sunlike star. Other planets occur in the "Goldilocks zone" around other stars such as red dwarves.

Of course, there are other possible locations where life could arise. In our own solar system, there are several icy moons that host sub-surface oceans that could possibly give rise to life, and these are not in the narrow band of orbital space where water could exist as a liquid at the surface. That greatly increases the number of potentially habitable worlds.

Within the next several decades we should learn whether any other life exists in our own solar system outside of Earth, whether it is (or was) simple microbial life that developed on Mars or complex (perhaps intelligent) creatures that have developed in the relatively constant environment of Europa's ocean over the last 4 billion years.

If we find other life in our solar system, that will be a pretty good indicator that life is common in the universe. If we don't, we will still be guessing about it until we discover evidence of life in another system. Either way, we now know that there are many places to look.

I doubt that we live in a Star Trek-like universe with numerous humanoid species with advanced civilizations currently existing, but as we fill in factors in the Drake Equation, we are getting closer to the answer. I hope I'm still around when we find out.

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Observer's Notebook—March 2023 by Ort

Planets Close to the Moon

Times are Hawaii Standard Time

- Mar 19, 8h, Moon 3.3° SE of Saturn; 28° and 27° from Sun in morning sky; magnitudes -6.7 and 1.0
- Mar 20, 23h, Moon 2.11° SE of Neptune; 6° and 5° from Sun in morning sky; magnitudes -4.6 and 8.0
- Mar 21, 17h, Moon 1.65° SE of Mercury; 6° and 5° from Sun in evening sky; magnitudes -4.6 and -1.7
- Mar 22, 11h, Moon 0.59° ESE of Jupiter; 15° from Sun in evening sky; magnitudes -5.6 and -2.1; occultation
- Mar 24, 1h, Moon 0.24° E of Venus; 36° from Sun in evening sky; magnitudes -7.3 and -4.0; occultation
- Mar 24, 14h, Moon 1.44° NNW of Uranus; 42° from Sun in evening sky; magnitudes -7.7 and 5.8
- Mar 28, 4h, Moon 2.30° N of Mars; 84° from Sun in evening sky; magnitudes -9.8 and 0.9

1-5 March: Venus and Jupiter very close
20 March: Spring equinox at 21:25 UT










Other Events of Interest

Times are Hawaii Standard Time

- Mar 1, 20h, Venus 0.49° NNW of Jupiter; 31° from Sun in evening sky; magnitudes -4.0 and -2.1
- Mar 2, 5h, Mercury 0.88° SE of Saturn; 12° from Sun in morning sky; magnitudes -0.6 and 0.9
- Mar 15, 14h, Neptune at conjunction with the Sun; 30.905 AU from Earth; latitude -1.21°
- Mar 16, 8h, Mercury 0.38° SE of Neptune; 2° and 1° from Sun in evening sky; magnitudes -1.8 and 8.0
- Mar 17, 1h, Mercury at superior conjunction with the Sun; 1.353 AU from Earth; latitude -5.53°
- Mar 20, 11h, Dwarf planet 1 Ceres at opposition in longitude; magnitude 7.0
- Mar 28, 4h, Moon, Mars, and M35 clu within circle of diameter 3.53°; about 84° from the Sun in the evening sky; magnitudes -10, 1, 5
- Mar 30, 12h, Venus 1.22° NNW of Uranus; 37° from Sun in evening sky; magnitudes -4.0 and 5.8

21 March: Dwarf planet Ceres at opposition in Coma Berenices
24 March: Moon near Venus in daylight
30 March: Venus near Uranus

Planets in March

 <h3>Mercury</h3> <p>Best at the end of the month in the evening sky. Near to Jupiter on 27 March.</p>	 <h3>Venus</h3> <p>Lovely evening planet. Close to Jupiter in the first week. Moon close on 23 and 24 March.</p>	 <h3>Mars</h3> <p>Declining evening planet. Still well presented but fading and shrinking. Mars is near the open cluster M35 on 30 March.</p>
 <h3>Jupiter</h3> <p>Evening planet near Venus early March, but poorly placed. Moon close on 22 March. Near Mercury on 27 March.</p>	 <h3>Saturn</h3> <p>Poorly located morning planet, unlikely to be seen this month, so not worth trying to view.</p>	 <h3>Uranus</h3> <p>Deteriorating evening planet, losing altitude throughout the month. Uranus is near Venus on 30 March.</p>
 <h3>Neptune</h3> <p>Too close to the Sun to be seen this month, so not worth trying to view.</p>	 <h3>Pluto (Dwarf Planet)</h3> <p>is visible in the dawn sky, rising at 03:43 (HST) – 2 hours and 54 minutes before the Sun</p>	 <h3>1—Ceres (Asteroid)</h3> <p>is visible in the morning sky, becoming accessible around 20:47, when it reaches an altitude of 21° above your eastern horizon.</p>

February 7th, 2023 7:30 PM (Bishop Museum Planetarium and Zoom Meeting)

Andy Stroble

General Membership Meeting

Meeting called to order at 7:32 pm by President Chris Peterson.

Minutes of the December and January meetings were approved.

Attending for the first time were Mikael, Ray Croft, Greg Wilson (long-time member, recently retired), and Jerry and Carol Peron. There were about ten people in the Planetarium, and another dozen attending on Zoom.

The Institute for Astronomy at the University of Mānoa will be holding its yearly open-house on April 23rd, volunteers for a HAS table were requested.

The July general membership meeting falls on July the 4th this year. A motion was made to shift that month's meeting to the 11th, and was unanimously approved.

VP Bill Barr updated us on the Discord server, progress is being made.

School Star Party Coordinator Mark Watanabe reported that there have been requests, and we should have some commitments by next month.

Members shared images of the comet C 2022 E3 ZTF. Ort had several, including a video showing the comets movement, and a composite shot of the ISS transiting the Sun. Steve Chun also has some comet pictures, and one of the Orion nebula.

Joanne experimented with broadcasting the planetarium over zoom, and treated us to the film Ngā Tohunga Whakare: The Navigators . Thanks, Joanne!

And thanks to Romee, and especially Bill and Steve, for setting up our first hybrid meeting!

Meeting adjourned at 9:06, and snacks were enjoyed!

Faithfully submitted,
James Andy Stroble, Secretary.





The Heart and Soul Nebulas



Explanation: Is the heart and soul of our Galaxy located in Cassiopeia? Possibly not, but that is where two bright emission nebulae nicknamed Heart and Soul can be found. The Heart Nebula, officially dubbed IC 1805 and visible in the featured image on the upper right, has a shape reminiscent of a classical heart symbol. The shape is perhaps fitting for Valentine's Day. The Soul Nebula is officially designated IC 1871 and is visible on the lower left. Both nebulae shine brightly in the red light of energized hydrogen, one of three colors shown in this three-color montage. Light takes about 6,000 years to reach us from these nebulae, which together span roughly 300 light years. Studies of stars and clusters like those found in the Heart and Soul nebulae have focused on how massive stars form and how they affect their environment.

Image Credit & Copyright: Juan Lozano de Haro

Hawaiian Astronomical Society
Event Calendar

March 2023						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	2	3	4
5 BoD Meeting 3:30PM Zoom	6	7  Full Moon 2:40AM Club Meeting 7:30PM Hybrid	8 Intl. Women's Day	9	10	11 Public Party Dillingham Airfield Sunset 6:39PM
12 Daylight Saving Begins	13	14  3rd Qtr 4:08PM	15	16	17 Saint Patrick's Day	18 Club Party Dillingham Airfield Sunset 6:41PM
19	20 Start of Spring (Spring Equinox)	21  New Moon 7:23AM	22	23	24	25 Public Party Geiger/Kahala Sunset 6:44PM
26	27	28  1st Qtr 4:32PM	29	30	31	Notes:

<<Upcoming Star Parties>>

Public Party-Dillingham March 11 —7:00 PM
Club Party Dillingham March 18 —7:00 PM
Public Party Geiger/Kahala March 25 — 7:00 PM

Upcoming School Star Parties

NASA's Night Sky Notes



Spot the Morning and Evening Star: Observe Venus

By 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 followup 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.

(Continued on page 9)

March is the doldrums for meteor showers with one weak, southerly shower. Conversely, February was a great month for meteorite falls! Three different meteorite falls and three meteorite recoveries over three days occurred according to a story reported by the American Meteor Society (AMS).

Feb 13 France

Asteroid 2023 CX1 (a meter-sized asteroid) entered Earth's atmosphere on 13 February 2023 02:59 UTC and disintegrated as a fireball over the coast of Normandy, France along the English Channel. It was discovered less than seven hours before impact by Hungarian astronomer Krisztián Sárneczky, at Konkoly Observatory's Piszkestető Station in Mátra Mountains, Hungary. It's only the 7th asteroid ever discovered prior its atmospheric entry. The AMS and its international partners IMO, Vigie-Ciel and UKMON received 83 reports about this event.

Two days later, a team found the first ~100g meteorite piece of what would lead to multiple recoveries. More than 10 meteorites fragment have since been recovered, and research teams are still searching for pieces of this 1-m diameter asteroid.



Feb 14 - Italy

Few hours later, another fireball was observed in the early evening of February 14 over Southern Italy. The AMS and the IMO along with PRISMA received 33 reports about this

(Continued on page 10)

First Quarter	Full Moon	Last Quarter	New Moon
March 28	March 07	March 14	March 21

Shower	Activity	Maximum		Radiant		V _∞ km/s	r	ZHR
		Date	λ☉	α	δ			
Gamma Normids (118 GNO)	Feb 25– Mar 28	Mar 14	354°	239°	-50°	56	2.4	6

If the Gamma Normids prove elusive, hunt meteorites instead! Tom Giguere, 808-782-1408, Thomas.giguere@yahoo.com; Mike Morrow, PO Box 6692, Ocean View, HI 96737.

Cash Flow - 1/10/2023 to 2/9/2023

Beginning Balance	\$4,671.31
Money into selected accounts comes from	
Donation	\$119.00
Membership – Electronic	\$160.00
Membership—Family	\$32.00
Membership - Paper	\$78.00
Total Money In	\$389.00

Money out of selected accounts goes to	
Total Money Out	\$0.00
Difference	\$256.00
Ending Balance	\$5,060.31

Here are the financials up through February 9.

Thanks to everyone who paid, renewed, and donated.

Covid numbers for Oahu, or the United States haven’t been valid for a while. New hospitalizations on Oahu average 7 per day, which is down, but has begun trending upward. Covid data from the five sewage treatment facilities that monitor it show medium levels in two (Waianae and the North Shore), and low everywhere else. The recent trend is up slightly, except the North Shore, where it is up more. Nation-wide, total hospitalizations (27,000) are down a bit. Daily deaths (445) dropped into the 300s, before rising again.

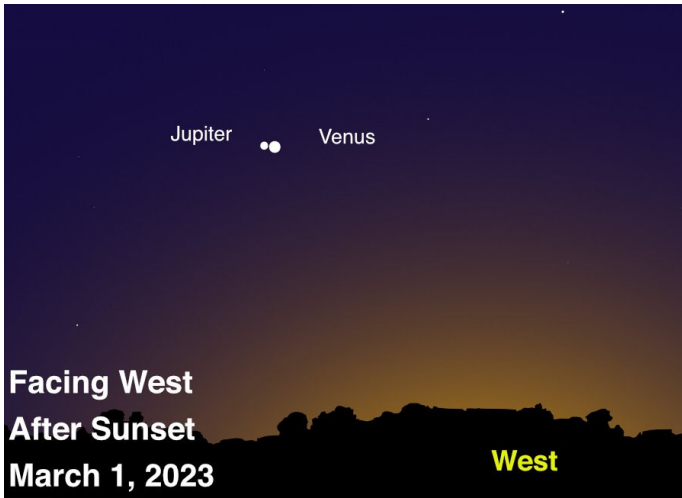
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Magellanic Clouds over Chile

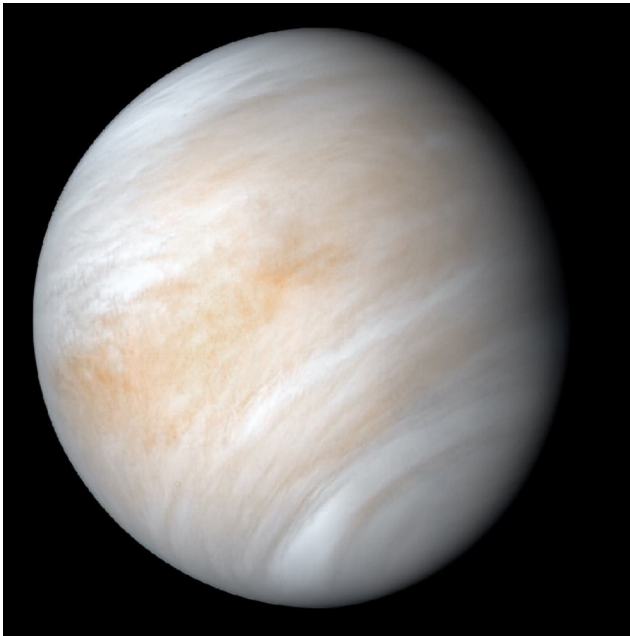
Explanation: The two prominent clouds in this Chilean Atacama Desert skyscape captured on January 21 actually lie beyond our Milky Way galaxy. Known as the Large and the Small Magellanic Clouds they are so named for the 16th century Portuguese explorer Ferdinand Magellan, leader of the first circumnavigation of planet Earth. Famous jewels of southern hemisphere skies, they are the brightest satellite galaxies of the Milky Way. The larger cloud is some 160,000 light-years, and the smaller 210,000 light-years distant. While both are irregular dwarf galaxies in their own right, they exhibit central barred structures in the deep wide-angle view. Wide and deep exposures also reveal faint dusty galactic cirrus nebulae and the imprints of gravitational tidal interactions between the Large and Small Magellanic Clouds.

Image Credit & Copyright: Felipe Mac Auliffe López



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.

Credit: NASA/JPL-Caltech

Source: <https://solarsystem.nasa.gov/resources/2524/newly-processed-views-of-venus-from-mariner-10/>

(Continued from page 1) - word from your editor

There will be a conjunction of Jupiter and Venus on Wednesday, 3/1/2023. I will try to capture the photo. If you capture this conjunction, please share it in the club meeting on Tuesday, 3/7/2023.

Clear Night everyone.



Lunar LOVE

A more creative search by a group of amateur astronomers in the Ehime Prefecture of Shikoku Island, Japan has found lunar L-O-V-E. Their secret was an examination of this sharp image of the First Quarter Moon. To discover it for yourself you'll need to look closely at details of the shadow and light along the terminator, the line between lunar night and day. Created by the contrast of shadowed crater floors with sunlit walls and ridges, the letter V is not too hard to find near the center of the image. Letters L and E are a bit more challenging though, but can be teased out of shadow and light along the terminator at the bottom. Of course, on the cratered surface of the Moon the O is easy ... Moonwatchers on planet Earth should understand that like the famous lunar X, also seen here, these lunar letters are transient and only appear along the terminator in the hours around the Moon's first quarter phase. So your next chance for lunar L-O-V-E is the first quarter Moon on November 15.

Image Credit & Copyright: Masaru Takeo - courtesy: Junichi Watanabe (NAOJ)

See if you can find it. Answer is on next page. Thanks Peter for forwarding email from Kayako to me.

(Continued from page 7) Meteor Log

event from Italy, Slovakia, Croatia and Montenegro. A few days later the Italian PRISMA team to recovered the first pieces of the "Valentines Day" meteorite.

Feb 15 - Texas

Several Rio Grande Valley (Texas) area residents heard a loud boom and felt the ground shake underneath them on February 15th, 5:23PM CST. NASA officials have now confirmed a 1,000-pound meteor as responsible for the disruption. It was estimated to be two feet in diameter and traveling at 27,000 miles per hour releasing energy equivalent to 8 tons of TNT. The meteoroid broke into fragments at an altitude of ~34 km and its entry was captured by NASA's GOES-16 satellite.

Falling debris from the meteorite was recorded on NOAA's NEXRAD doppler weather radar and on February 18th, first meteorite fragment was recovered near El Sauz TX.



2023 CX1 Meteor Flash

Explanation: While scanning the skies for near-Earth objects Hungarian astronomer Krisztián Sárneczky first imaged the meter-sized space rock now cataloged as 2023 CX1 on 12 February 2023 at 20:18:07 UTC. That was about 7 hours before it impacted planet Earth's atmosphere. Its predicted trajectory created a rare opportunity for meteor observers and a last minute plan resulted in this spectacular image of the fireball, captured from the Netherlands as 2023 CX1 vaporized and broke up over northern France. Remarkably it was Sárneczky's second discovery of an impacting asteroid, while 2023 CX1 is only the seventh asteroid to be detected before being successfully predicted to impact Earth. It has recently become the third such object from which meteorites have been recovered. This fireball was witnessed almost 10 years to the day following the infamous Chelyabinsk Meteor flash.

Image Credit & Copyright: Gijs de Reijke



Lunar LOVE Answer





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Spiral Galaxy Spans Space

This composite of the giant barred spiral galaxy NGC 6872 is 522,000 light-years across, making it about five times the size of the Milky Way.

Image Credit: NASA/ESO/JPL-Caltech/DSS